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THESIS

A CLASSIFICATION AND ANALYSIS OF *NATIONAL CONTRACT MANAGEMENT JOURNAL* ARTICLES FROM 1990 TO 1999 AND *JOURNAL OF SUPPLY CHAIN MANAGEMENT* ARTICLES FROM 1987 TO 2000

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**A CLASSIFICATION AND ANALYSIS OF *NATIONAL CONTRACT
MANAGEMENT JOURNAL* ARTICLES FROM 1990 TO 1999 AND *JOURNAL OF
SUPPLY CHAIN MANAGEMENT* ARTICLES FROM 1987 TO 2000**

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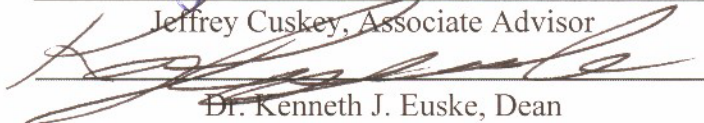
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ABSTRACT

This thesis was an attempt to classify, analyze and summarize selected, finite bodies of contracting literature and purchasing literature. The primary objective of this thesis was to apply an existing taxonomy to recent libraries of two different publications, one representative of Government contracting and one representative of commercial purchasing. Analysis of the results of this classification effort provided conclusive information about taxonomical similarities and differences between contracting and purchasing literature in these two publications.

A secondary objective of this thesis was to assess the differences in subject matter between the two journals and by extension, the differences between Government contracting literature and commercial purchasing literature.

The final objective of this thesis was to compile an annotated bibliography of articles printed in the contracting journal that have not been previously annotated.

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I. INTRODUCTION

A. BACKGROUND

This thesis classifies, analyzes, and compares a selected, finite body of Government contracting literature and a selected, finite body of commercial purchasing literature. The results should provide conclusive information about focal points in the literature and about similarities and differences between contracting and purchasing literature. This information may assist the contracting and purchasing communities in determining where past research has concentrated and where future research may be required.

B. OBJECTIVES

The primary objective of this thesis is to apply an existing taxonomy to the complete library of two publications representative of Government contracting and commercial purchasing literature. A comparison and analysis of the results of this classification effort should provide a more complete understanding of the trends in the literature reviewed, including similarities and differences in the contracting and purchasing bodies of literature.

The secondary objective of this thesis is to update the classification done by separate researchers on these two bodies of literature.

The final objective of this thesis is to compile an annotated bibliography of the articles published in the *National Contract Management Journal* since 1991. This will update

previous research efforts (Sweeney, 1989; Smith, 1991), which summarized each article that had been published in the *National Contract Management Journal* from 1966 through 1990.

C. RESEARCH QUESTIONS

The primary research question of this thesis is:

- What would be the results of classifying the literature presented in the *National Contract Management Journal* from Volume 24, Issue 1 (1991) through Volume 29, Issue 2 (1999) and the literature presented in the *Journal of Supply Chain Management* from Volume 23, Issue 1 (1987) through Volume 35, Issue 4 (1999), and what patterns and trends in the literature could be discovered in an analysis of the results?

The subsidiary research questions of this thesis are:

- To what extent does a statistical analysis of the results of the classification of this literature provide information on where most contracting and purchasing literature has focused?
- What will a comparative analysis of the results of classification of this literature suggest about similarities and differences in the contracting and purchasing literature?
- What will the analysis of the results of the classification of this literature suggest about similarities and differences in the contracting and purchasing bodies of knowledge?
- To what extent does an analysis of the results of the classification of this literature provide information on the evolution of the contracting and purchasing fields?
- What would be the results of compiling an annotated bibliography of the literature presented in the *National Contracting Management Journal* from 1990 through 1999?

D. SCOPE, LIMITATIONS, AND ASSUMPTIONS

1. Scope

A 1989 Naval Postgraduate School, Monterey, thesis by R.F. Sweeney, titled “A Classification and Analysis of Contracting Literature,” developed a taxonomy for classifying contracting literature. This taxonomy, hereafter referred to as Sweeney’s Taxonomy, was applied to five years (1984-1988) of literature from the *National Contract Management Journal*. Sixty-seven articles were classified, analyzed, and summarized in an annotated bibliography (Sweeney, 1989).

A 1991 Naval Postgraduate School, Monterey, thesis by D.A. Smith, titled “A Classification and Analysis of *National Contract Management Journal* Articles From 1966 Through 1989” expanded Sweeney’s Taxonomy to include indexing by subject matter. The taxonomy, hereafter referred to as Sweeney’s Expanded Taxonomy, assigned each article to a subject index, coinciding with one of the 69 National Contract Management Association Body of Knowledge modules which are listed in Appendix A. Smith did not duplicate Sweeney’s classification of the five years of *National Contract Management Journal* articles that Sweeney reviewed. This thesis will extend Smith’s research by applying Sweeney’s Expanded Taxonomy to the literature that has appeared in the *National Contract Management Journal* from 1991 through 1999. To maintain consistency with the earlier effort, the same subject matter categories will be used.

Sweeney's research effort was based on a research effort of Alvin J. Williams and A. Ben Oumlil. Their study was titled "A Classification and Analysis of *JPMM* Articles." It was published in the Fall 1987, *Journal of Purchasing and Materials Management*. The primary objective of the Williams and Oumlil study was to classify all articles that had appeared in the *Journal of Purchasing and Materials Management* from 1965 through 1986. The *Journal of Purchasing and Materials Management* was renamed the *International Journal of Purchasing and Materials Management* in 1991 and was renamed the *Journal of Supply Chain Management* in 1999; hereafter, it will be referred to as the *Journal of Supply Chain Management*. This thesis will apply Sweeney's

Expanded taxonomy to the literature that appeared in the *Journal of Supply Chain Management* from 1987 through 2000. To maintain consistency with the earlier effort, the same subject matter categories were used.

The *National Contract Management Journal* is targeted toward Government contracting and acquisition. It is published by the National Contract Management Association for both Government and industry personnel. The *Journal of Supply Chain Management* is targeted toward commercial purchasing personnel; it is not Government oriented. It is published by the National Association of Purchasing Management.

Analysis of the entire body of contracting and purchasing literature is beyond the scope of this thesis for the same reasons stated by Sweeney: there is no single source for contracting literature, and time constraints require some limit on the volume of literature to be classified

(Sweeney, 1989, p. 4). The same reasoning precludes attempting to classify the entire body of purchasing literature in this thesis.

2. Limitations

Due to the scope limitations imposed by this researcher, external factors did not impede the completion of this thesis. This thesis will be limited to using the subject categories used in the original studies (Williams, 1987; Smith, 1991). Chapters III and IV present summary analyses of each journal using Sweeney's Expanded Taxonomy. Sweeney's Expanded Taxonomy is applied to each journal, since it provides more detailed information than the Williams/Oumlil approach.

3. Assumptions

There were no significant assumptions made in the performance of this research.

E. LITERATURE REVIEW AND METHODOLOGY

R.F. Sweeney developed a classification scheme that went beyond simply indexing by author, title, or subject (Sweeney, 1989, p. 1). He used William and Oumlil's classification approach as a basis for developing a more complete taxonomy to classify literature.

This study is primarily an extension of the research effort presented in D.A. Smith's 1991 Naval Postgraduate School, Monterey, Master's Degree thesis. The primary objective of the Smith study was to classify and analyze the entire library of *National Contract*

Management Journal articles using Sweeney's Taxonomy, expanded to include subject matter classification. This thesis is also an extension of the research effort of Alvin J. Williams and A. Ben Oumlil.

The *National Contract Management Journal Cumulative Subject, Author, and Title Index* (1989), contains 69 topic area modules which subdivide the acquisition and contracting Body of Knowledge. The modules provided the subject areas used in Sweeney's Expanded Taxonomy. Since then, the National Contract Management Association has revised the Body of Knowledge to make it process oriented rather than subject matter oriented. To maintain consistency with the prior research, this research used the same subject categories as those used by Smith (1991).

This study consisted of three phases. The first phase was to apply Sweeney's Expanded Taxonomy to all articles in the *National Contract Management Journal* Volume 24, Issue 1 (1991) through Volume 29, Issue 2 (1999). Each article was also summarized in an annotated bibliography. The second phase was to apply Williams and Oumlil's classification approach to articles in the *Journal of Supply Chain Management* Volume 23, Issue 1 (1987) through Volume 36, Issue 1 (2000). The third phase was analysis of the results of applying the taxonomies, and a comparison of the two bodies of literature.

F. DEFINITIONS

The following definitions distinguish between taxonomy and a classification system (Sweeney, 1989, p. 6).

- Taxonomy – the theory and practice of delimiting and classifying different kinds of entities. It includes the classification system itself, the theory used to build it and the methods used to construct it.
- Classification – the development of a system to enable researchers to arrange entities into taxonomy based on their similarities, differences, and relationships to one another.

G. ORGANIZATION OF THE STUDY

This thesis will be presented in five chapters and three appendices. Chapter I presented a general introduction to the research effort, its background, objectives, scope, methodology, and organization.

Chapter II is a description of the taxonomy developed by Sweeney and expanded by Smith, and the classification approach used by Williams and Oumlil. Limitations are also discussed. Chapters III and IV present summary analyses of the results of classifying articles in the *National Contract Management Journal* from 1991 to 1999 and articles in the *Journal of Supply Chain Management* from 1987 to 2000. Chapter V presents conclusions and recommendations based on the results of classification and analysis of these two journals.

Appendix A is an annotated bibliography of *National Contract Management Journal* articles from 1991 through 1999. Appendix B is a listing of the subject matter categories used by Williams and Oumlil, and used by this researcher to classify articles in the *Journal of Supply Chain Management*. Appendix C is a listing and classification of *Journal of Supply Chain Management* articles from 1987 through 2000.

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II. PURCHASING AND CONTRACTING LITERATURE CLASSIFICATION

A. INTRODUCTION

This chapter will discuss classification of purchasing and contracting literature. First, classification in general will be discussed. Next, the Williams and Oumlil approach will be considered. Finally, Sweeney's Taxonomy will be detailed.

A traditional approach to classifying literature is grouping the literature by subject matter. Most libraries practice this approach; publications are typically classified by author, title, and subject (Smith, 1991, p.10). An example of classifying literature by subject matter is the Article Index (1965-1997), published in the *Journal of Supply Chain Management* (Winter 1998). This index classifies nearly 700 articles, published in the periodical from 1965 through 1997, into 40 subject areas.

Williams and Oumlil classified 472 articles published in the *Journal of Supply Chain Management* from 1965 through 1986 (Williams, 1987). They classified these articles by subject matter as well as by the type and nature of each article. Classifying by more than strictly subject matter provided greater insight into the purchasing and materials management field. They classified the articles into 25 subject matter categories.

Sweeney developed a taxonomy for classifying contracting literature and applied it to a small number of articles from the *National Contract Management Journal* to validate the taxonomy. Sweeney recognized the value of the Williams/Oumlil approach. He believed that it

could be modified to make an effective taxonomy for classifying literature (Sweeney, 1989, p. 24). The result of Sweeney's modification to the Williams/Oumlil approach is Sweeney's Taxonomy (Smith, 1991, p. 11).

D.A. Smith expanded Sweeney's Taxonomy to include subject matter. This revised taxonomy is referred to as Sweeney's Expanded Taxonomy. He applied Sweeney's Expanded Taxonomy to 413 articles published in the *National Contract Management Journal* from 1966 through 1990. His classification using the taxonomy yielded insight into literature in the contracting field.

This chapter will discuss the Williams/Oumlil approach and Sweeney's Expanded Taxonomy, which have been used to classify purchasing and contracting literature. It will be presented in three sections. The first section will discuss the Williams/Oumlil approach. The second section will discuss Sweeney's Expanded Taxonomy. The third section will discuss limitations of these classification approaches.

B. WILLIAMS/OUMLIL APPROACH

This section will discuss the Williams/Oumlil approach. First, the Williams/Oumlil approach will be described. Second, the application of the approach will be explained.

1. Description

Williams and Oumlil used a four-step approach to classify and summarize the complete library of articles published in the *Journal of Supply Chain Management*. The first step is to

assign the article to one of four TYPE OF ARTICLE categories. The four TYPE OF ARTICLE categories are (Williams, 1987, p.25):

- theoretical/conceptual
- practical/managerial
- case history
- professional/educational

Williams and Oumlil provided the following description of the TYPE OF ARTICLE categories. Theoretical/conceptual articles have as their primary focus the elaboration or development of some principle or idea with potential application to the purchasing discipline. Practical/managerial articles explore or develop application of basic concepts. Case history articles address the activities of a specific industry or product/service area. Professional/educational articles address certification, academic opportunities, continuing education, or related matters (Williams, 1987, p.25).

The second step is to place the article into one of two NATURE OF ARTICLE categories. The two categories are (Williams, 1987, p.25):

- Positive
- Normative

An article is classified as positive if it is descriptive in nature; it describes some phenomena. An article is classified as normative if it is prescriptive in nature; it describes the way things should be.

The third step is to place each article in a SUBJECT MATTER category. Williams and Oumlil used 25 categories. They determined what subject categories to use by examining tables of contents from leading textbooks in the purchasing field.

The fourth step is to place the article into a DATE OF ARTICLE category. Williams and Oumlil assigned articles to time periods of four or five years in length.

The Williams/Oumlil approach has two implicit requirements: (1) each article will be categorized during each step, and (2) each article will be assigned to categories on a mutually exclusive basis. For example, an article cannot be categorized as both positive and normative; it must be assigned to either one category or the other. Williams and Oumlil did not explicitly note these requirements, but do imply them in the presentation of their results (Smith, 1991, pp. 14-15).

2. Application

Williams and Oumlil used their classification approach to classify 472 articles published in the *Journal of Supply Chain Management* from 1965 through 1986.

This researcher classified 292 original articles printed in the *Journal of Supply Chain Management* from 1987 through 2000, using Sweeney's Expanded Taxonomy, which is discussed in the next section. To maintain consistency with the Williams/Oumlil classification

approach, and to facilitate comparison with their results, this researcher included case history as a TYPE OF ARTICLE when classifying articles from the *Journal of Supply Chain Management*. From 1987 to 1999, 14 articles were published more than once. In this research, those articles were classified and counted only once.

C. SWEENEY'S EXPANDED TAXONOMY

Sweeney used the Williams/Oumlil approach as a starting point in developing his own taxonomy. This section will discuss classification theory, the taxonomy that Sweeney developed, and the modification made by Smith, resulting in Sweeney's Expanded Taxonomy.

1. Classification Theory

There is a difference between a classification system and a taxonomy. A classification system is used to divide items into categories. A taxonomy includes a classification system, and it also includes the theoretical basis and method by which the system is developed. Sweeney suggests that Williams and Oumlil presented a classification system in their article, not a taxonomy (Sweeney, 1989, p. 17). The fact that Williams and Oumlil did not present a taxonomy in their article does not diminish the value of their research, but it does invite questions about the optimality of their system. For example, does the Williams/Oumlil approach (Smith, 1991, p. 16):

- meet the objectives of a classification system?
- conform with the desired attributes of categories?

- possess the key attributes of a classification system?

These questions are at the heart of Sweeney's evaluation of the Williams/Oumlil approach as a suitable classification system for contracting literature (Sweeney, 1989, pp. 20-24). They are derived from classification theory Sweeney examined during the conduct of his research.

A cursory review of the highlights of classification theory referred to in Sweeney's thesis is appropriate for different reasons. First, it indicates that Sweeney subjected the Williams/Oumlil approach to rigorous evaluation. Second, it identifies the requirements that must be met in modifying the Williams/Oumlil approach to conform to classification theory. Third, it suggests that Sweeney's classification system conforms to the definition of a taxonomy (Smith, 1991, p. 16).

The first question addresses the objectives of classification systems. There are four objectives of a classification system (Chrisman, 1988, p.415):

- differentiation
- generalization
- identification
- information retrieval

Differentiation suggests that a classification system should segregate entities possessing diverse traits. Classification systems should establish groupings about which generalizations can be made. Identification can be defined as the procedure of identifying entities to existing categories of an existing classification scheme. Lastly, a classification system should serve as a

convenient information storage and retrieval system, to facilitate use and application of the generalizations made from comparative studies (Sweeney, 1989, pp. 9-10).

The second question addresses the key attributes of the classification system's categories. For a classification system to achieve its objectives, it must possess certain attributes (Chrisman, 1988, p. 416):

- mutual exclusivity
- internal homogeneity
- completeness
- stability
- basis in relevant language or names

The third and final question addresses the key attributes of a classification system. In addition to the categories possessing certain attributes, the system as a whole must possess key attributes; specifically, the system should be (Chrisman, 1988, p. 417):

- based on the key attributes of the entities being classified
- general rather than special purpose
- parsimonious (using the fewest number of possible categories)
- hierarchical in nature
- timeless

Sweeney thoroughly described his theoretical evaluation of the Williams/Oumlil approach. In his overall assessment of their approach, he stated:

Analysis of the Williams/Oumlil classification system finds that it meets most of the criteria of the optimal classification scheme detailed earlier. Its categories are complete and labeled with relevant names. The system itself is based on key characteristics of the literature it classifies. It is general purpose, parsimonious, and timeless. The areas in which it is weak are that its categories are not mutually exclusive...this flaw resulted in the determination that the categories are not homogeneous or stable. Finally, the system is not hierarchical (Sweeney, 1989, p. 24).

Sweeney concluded that despite its flaws, the Williams/Oumlil approach to classifying literature performs well in practice:

Overall, the Williams/Oumlil system is a good system that can be even better with some minor adjustments. It is a useful system in terms of modifying it as a tool for classifying contracting literature. (Sweeney, 1989, p. 24)

2. Sweeney's Taxonomy

Sweeney's Taxonomy is a classification system for contracting literature. It is the result of modifying the Williams/Oumlil approach in an attempt to develop a theoretically optimal classification system.

Recall that the Williams/Oumlil approach is based on four category groups:

- TYPE OF ARTICLE
- NATURE OF ARTICLE
- SUBJECT MATTER
- DATE OF ARTICLE

The TYPE OF ARTICLE group consists of four categories: theoretical/conceptual, practical/managerial, case history, and professional/educational. Sweeney rejected the case

history category because case history articles could also be categorized as either theoretical or practical. Eliminating the case history category improves the classification system's parsimony without losing the goal of completeness (Sweeney, 1989, p.25). Sweeney's Taxonomy retains the three TYPE OF ARTICLE categories other than case history: theoretical/conceptual, practical/managerial, and professional/educational.

Sweeney accepts the NATURE OF ARTICLE category without adjustment.

Sweeney's Taxonomy includes two NATURE OF ARTICLE categories: positive and normative. Positive articles are descriptive in nature. Normative articles are prescriptive in nature.

Sweeney's taxonomy deleted the SUBJECT MATTER and DATE OF ARTICLE categories. His decision not to include SUBJECT MATTER as a category may be due to the fact that a subject matter index for contracting literature already existed. Recall that Williams and Oumlil used the DATE OF ARTICLE category to analyze the SUBJECT MATTER of the articles over different time intervals; the DATE OF ARTICLE category was not used to analyze the TYPE OF ARTICLE or NATURE OF ARTICLE categories over different time intervals. Sweeney probably links his decision to exclude the DATE OF ARTICLE category with his decision to exclude the SUBJECT MATTER category from his taxonomy (Smith, 1991, p.20).

Sweeney made other adjustments in his classification approach, to correct flaws in the Williams/Oumlil approach. These other adjustments are made to develop a taxonomy that

meets the goals of being “mutually exclusive, homogeneous, stable, and hierarchical (Sweeney, 1989, p. 25).”

Sweeney explicitly required that articles be assigned to categories on a mutually exclusive basis. By doing this, the classification system should be internally homogeneous and stable. (Sweeney, 1989, p. 27)

Recall that there are two category approaches retained from the Williams/Oumlil approach: TYPE OF ARTICLE and NATURE OF ARTICLE. Sweeney noted that the Williams/Oumlil system is not hierarchical, it is flat (Sweeney, 1989, p. 23). The NATURE OF ARTICLE group has two categories, normative and positive. To create a hierarchical classification system, Sweeney subdivided the normative and positive NATURE OF ARTICLE categories by BASIS FOR ANALYSIS.

The subcategory of BASIS FOR ANALYSIS seeks to determine if articles are based on empirical or non-empirical evidence. Sweeney suggested that articles based on empirical evidence tend to be more convincing than non-empirical articles based on opinion (1989, p.27). The two BASIS OF ANALYSIS categories are:

- empirical
- non-empirical

This adjustment makes the classification system hierarchical. Sweeney believed that valuable information could be provided by subdividing these categories by the type of logic the author employs to reach conclusions (Sweeney, 1989, p. 28). To this end, Sweeney

subdivided the empirical and non-empirical BASIS FOR ANALYSIS categories by
APPROACH TO REACHING CONCLUSIONS.

The sub-subcategory group APPROACH TO REACHING CONCLUSIONS
contains three categories:

- Inductive logic
- Deductive logic
- No particular logic

Inductive articles reflect reasoning from specific cases to make a general point.

Deductive articles reflect reasoning from a general approach to a specific case. Sweeney defined a “no particular logic” article as one in which the author does not rely on an inductive or deductive line of reasoning to support or arrive at his conclusions (Sweeney, 1989, p. 29).

It is possible to offer a summary description of Sweeney’s Taxonomy. Sweeney described his taxonomy as follows:

... the contracting literature taxonomy contains three basic categories on its vertical axis: theoretical/conceptual, managerial/practical, and professional/education. Each of these three categories is subdivided on three levels. The elementary division according to nature of article is between positive and normative. Each of these divisions is subdivided into empirical and non-empirical as indicators of the authors’ basis for analysis. Finally, each of those subdivisions is further subdivided into inductive, deductive and no particular logic according to the authors’ approaches to reaching conclusions. Effectively, the article can thus be assigned to one of thirty-six categories. (Sweeney, 1989, p.30-31)

3. Sweeney's Expanded Taxonomy

Smith modified Sweeney's Taxonomy, resulting in Sweeney's Expanded Taxonomy. Recall that Sweeney did not include a subject matter category in his taxonomy, perhaps due to the fact that a subject matter index already existed (Smith, 1991, pp.19-20). Smith considered subject an important attribute to include in a classification scheme, so he included SUBJECT MATTER as a category (Smith, 1991, p. 25). He assigned each article to only one subject area.

To determine appropriate subject categories, Smith noted that the National Contract Management Association has 69 Body of Knowledge modules that organize the field of contracting. The modules cover the majority of the field of Government contracting. These modules are shown in Appendix A. Smith used these 69 modules as subject areas for classifying articles.

Smith's modification of Sweeney's Taxonomy to include subject matter resulted in Sweeney's Expanded Taxonomy. Sweeney's Expanded Taxonomy is illustrated in Figure 2-1.

Smith did not explicitly include DATE OF ARTICLE in Sweeney's Expanded Taxonomy. In his application of Sweeney's Expanded Taxonomy, however, Smith analyzed classification results from different time periods to determine trends in the literature. This suggests that knowing an article's date of publication helps determine trends in the literature over time.

FIGURE 2-1: SWEENEY'S EXPANDED TAXONOMY

Nature of Article	Normative (Prescriptive)						Positive (Descriptive)						
Basis for Analysis	Empirical			Non-Empirical			Empirical			Non-Empirical			
Approach to Reaching Conclusions	I	D	NPL	I	D	NPL	I	D	NPL	I	D	NPL	Total
Theoretical/Conceptual													
Practical/Managerial													
Professional/Educational													
Total													

NCMA Body of Knowledge Module:

I = Inductive reasoning D = Deductive reasoning NPL = No Particular Logic

Source: R.F. Sweeney Thesis and D.A. Smith Thesis

4. Application

Smith classified 413 *National Contract Management Journal* articles published from 1966 through 1990, using Sweeney's Expanded Taxonomy. This researcher used the same taxonomy to classify the 65 articles published in the *National Contract Management Journal* from 1991 through 1999.

In addition, Sweeney's Expanded Taxonomy was used to classify articles from the *Journal of Supply Chain Management*.

The subject matter categories used in this research are the same ones used by Smith (1991). Since then, the National Contract Management Association has changed the way it describes the contracting Body of Knowledge, employing a more process-oriented approach. The 69 modules used in earlier research provide better subject headings than the current process-oriented approach. For that reason, and to maintain consistency with earlier research (Smith, 1991), the same 69 Body of Knowledge modules were used as the subject categories by the researcher.

Although Sweeney's Expanded Taxonomy provides more information than the Williams/Oumlil approach, case history as used by Williams and Oumlil will also be used by this researcher to facilitate comparing the results of this researcher with those of Williams and Oumlil.

Williams and Oumlil used their classification approach to classify 472 *Journal of Supply Chain Management* articles published from 1965 through 1986. Their classification approach included case history as a TYPE OF ARTICLE. This researcher used Sweeney's Expanded Taxonomy to classify the 292 articles published in the *Journal of Supply Chain Management* from 1987 through 2000, but included case history as a TYPE OF ARTICLE. This will facilitate comparing this researcher's results with those of Williams and Oumlil.

For classification of subject matter, subject matter categories were the same as those used earlier for each journal. This will facilitate subject matter comparisons with earlier research. Smith used the National Contract Management Association's 69 Body of Knowledge modules as subject matter categories for classifying articles from the *National Contract Management Journal*. This researcher used the same subject categories to classify articles from the *National Contract Management Journal*. Williams and Oumlil used 25 subject matter categories for classifying articles from the *Journal of Supply Chain Management*. This researcher used the same subject categories to classify articles from the *Journal of Supply Chain Management*.

D. LIMITATIONS

This literature classification effort is limited. Limitations to be discussed in this section include: (1) subjectivity, (2) TYPE OF ARTICLE differences, and (3) the less detailed approach of Williams/Oumlil.

1. Subjectivity

Sweeney (1989, p. 40) and Smith (1991, p.33) both note the problem of subjectivity. Assigning articles to categories is a subjective process, strongly influenced by the experience and opinions of the classifier. Someone could logically classify the same articles classified in this study to different categories than this researcher did. If they used the same classification approach, the results would probably be similar, but not exactly the same.

2. TYPE OF ARTICLE Differences

Williams and Oumlil (1987) included case history as a TYPE OF ARTICLE, along with theoretical/conceptual, practical/managerial, and professional/educational.

This researcher used the Williams/Oumlil approach and included case history as a separate TYPE OF ARTICLE for classification of articles in the *Journal of Supply Chain Management*. Sweeney's Expanded Taxonomy, which does not include case history as a TYPE OF ARTICLE, was used to classify the *National Contract Management Journal* articles.

Using case history as a TYPE OF ARTICLE for classification of *Journal of Supply Chain Management* articles will ease comparisons between this researcher's results and those of Williams and Oumlil. However, it will not facilitate direct comparison with the *National Contract Management Journal* classification results, since that classification did not use case history as a TYPE OF ARTICLE. Case histories are not extensive in the literature, so this is not a major limitation. Almost all of the articles classified as case history would have been classified as practical/managerial if case history were not a category.

3. Williams/Oumlil Less Detailed

The Williams/Oumlil approach offers less detailed information than Sweeney's Expanded Taxonomy, and their approach is not hierarchical. Williams and Oumlil categorized articles according to TYPE OF ARTICLE (theoretical, practical, case history, or professional), NATURE OF ARTICLE (normative or positive) and SUBJECT MATTER.

Williams and Oumlil did not classify using the subcategory of BASIS FOR ANALYSIS (empirical or non-empirical). They did not classify using the sub-subcategory of APPROACH TO REACHING CONCLUSIONS (inductive, deductive, or no particular approach). Because of this, comparison between the results of this researcher's classification with the results of Williams and Oumlil will be limited to the traits that Williams and Oumlil used in their classification approach. Comparisons on BASIS FOR ANALYSIS and APPROACH TO REACHING CONCLUSIONS will not be possible.

E. SUMMARY

This chapter discussed two classification approaches used by previous researchers to classify purchasing and contracting literature and detailed the approaches used by this researcher. The Williams/Oumlil approach, used to classify articles in the *Journal of Supply Chain Management*, was discussed first. Sweeney's Expanded Taxonomy, which Smith used to classify articles in the *National Contract Management Journal*, was discussed next. Understanding these two classification approaches provides groundwork for the analysis in Chapters III and IV.

Chapter III will present a summary analysis of the 65 *National Contract Management Journal* articles published from 1990 through 1999 that were classified by the researcher. Chapter IV will present a summary analysis of the 292 *Journal of Supply Chain Management* articles published from 1987 through 2000 that were classified by the researcher.

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III. SUMMARY ANALYSIS OF *NATIONAL CONTRACT MANAGEMENT JOURNAL* ARTICLES

A. INTRODUCTION

There were 65 articles published in the *National Contract Management Journal* from 1991 through 1999. Sweeney's Taxonomy, expanded to permit subject matter classification, was applied to each article. Analysis of the results of applying the expanded taxonomy will provide information about patterns and trends in the literature of this periodical, which is targeted toward Government and industry personnel involved in Government contracting.

Sweeney's Expanded Taxonomy is an effective structure for classifying contracting literature. Using this taxonomy will allow the researcher to gain an understanding of the *National Contract Management Journal* in recent years (from 1991 to 1999). Furthermore, a comparison of these recent journal articles can be made with the articles previously studied by Smith and Sweeney.

B. APPLICATION OF SWEENEY'S EXPANDED TAXONOMY

Application of the expanded taxonomy is fairly straightforward, subject to the limitations described in Chapter II. The 65 articles that were published in the *National Contract Management Journal* from Volume 24, Issue 1 (1991) through Volume 29, Issue 2 (1999) were classified using Sweeney's Expanded Taxonomy.

Applying the taxonomy is a two-step process. First, the researcher assigned an article to one of the categories in Sweeney's classification matrix. Second, the researcher assigned an article to one of the National Contract Management Association Body of Knowledge subject matter modules.

Sweeney suggests that as each article is reviewed, the following questions should be kept in mind (Sweeney, 1989, p. 37):

- Is the article empirical? Is it based on some kind of random sample, extensive observation, or substantial use of statistical theory?
- Is the article descriptive (positive)? Does it explain or describe how some existing process works? Or is it prescriptive (normative)? Does it propose the way a process should work, how the design of some system/process should be changed to make it better?
- Does the author reason from specific cases to a statement or assertion about an entire group or class of things (inductive logic)? Or does the author describe how an entire class of things works and deduces from that this particular item should thus operate in a similar manner (deductive logic)? Or does the author apply any type of logic at all? The article may be purely descriptive.
- Is the article about an intangible, conceptual, more abstract theory (theoretical)? Or is it more immediately useful, practical, and important to the routine function of the manager (practical)?
- Does the article concern neither practical nor theoretical concepts, but rather professional areas such as certification, advancement, or educational issues (professional/educational)?

Since the taxonomy was expanded to include subject matter classification, other questions must be addressed to complete the classification process (Smith, 1991, p. 32):

- What is the subject matter thrust of the article?
- Which of the 69 National Contract Management Association Body of Knowledge modules best represents the thrust of the article?

Applying the taxonomy results in the assignment of an article to one of 36 categories in the taxonomy matrix and one of 69 subject matter modules.

C. SUMMARY ANALYSIS

This summary analysis will be presented in three subsections. The first subsection will examine the taxonomical classification results generated by the categories in Sweeney's Taxonomy. The second section will evaluate the results generated by classifying the subject matter of each article. The final subsection will analyze the hybrid results generated by Sweeney's Expanded Taxonomy.

1. Taxonomical Results

Figure 3-1 is a summary of the results of applying Sweeney's Taxonomy to the literature. The articles were classified by TYPE OF ARTICLE (theoretical, practical, or professional), NATURE OF ARTICLE (normative or positive), BASIS FOR ANALYSIS (empirical or non-empirical), and APPROACH TO REACHING CONCLUSIONS (inductive, deductive, or no particular logic).

Analysis of the four main categories in Sweeney's Taxonomy yields valuable information about the focus of contracting literature. Figure 3-2 is a breakdown of the TYPE OF

ARTICLE category: 26 (46%) articles are theoretical, 27 (48%) are practical, and three (5%) are professional.

Figure 3-1: Summary of Article Classification 1991-1999

Nature of Article	Normative (Prescriptive)						Positive (Descriptive)						Total
Basis for Analysis	Empirical			Non-Empirical			Empirical			Non-Empirical			
Approach to Reaching Conclusions	I	D	NPL	I	D	NPL	I	D	NPL	I	D	NPL	
Theoretical/Conceptual	6			5	4	1	3	1	1	1	4	1	27
Practical/Managerial	6	2		9	4	1	8			1	2	2	35
Professional/Educational							1				1	1	3
Total	12	2		14	8	2	12	1	1	2	7	4	65

Normative = 38 Positive = 27

Empirical = 28 Non-Empirical = 37

Inductive = 40 Deductive = 18 No Particular Logic = 7

I = Inductive reasoning D = Deductive reasoning NPL = No Particular Logic

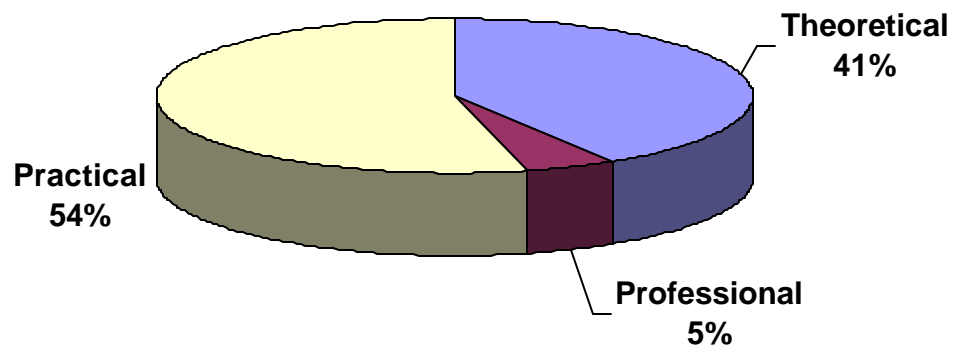
Source: R.F. Sweeney Thesis and researcher's analysis

There are more practical articles than theoretical ones; very few are professional/educational.

Thirty-five (54%) articles were practical, 27 (42%) were theoretical, and only three (5%) were professional/educational. Many journals may be more theoretical in nature, but the *National*

Contract Management Journal is intended to be a practitioner's journal, rather than strictly an academic one.

Figure 3-2: TYPE OF ARTICLE CATEGORY



The small number of professional articles is notable. Sweeney suggests

The *National Contract Management Journal* is not generally a forum for pieces on certification, educational opportunities, or advancement in contracting. These issues are most often found in publications such as *Contract Management* magazine. (Sweeney, 1989, p. 40)

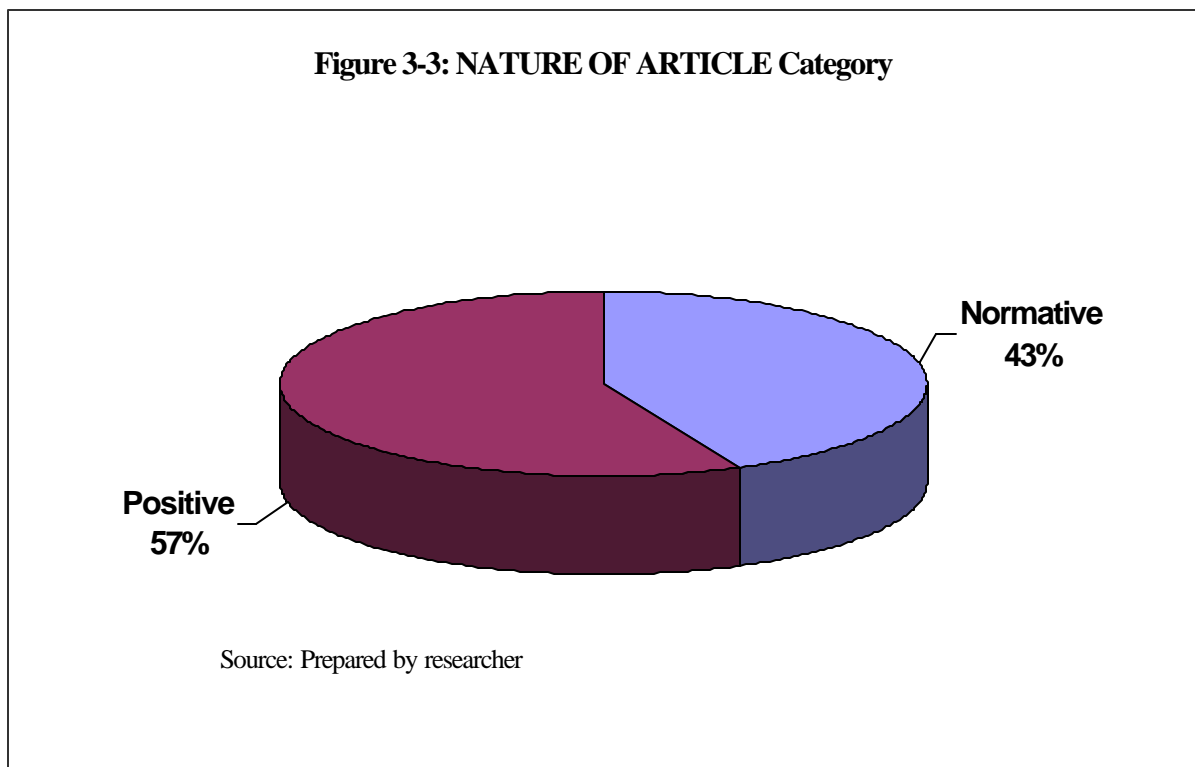
Articles dealing with professional growth would not necessarily be included in the *National Contract Management Journal*. However, given the seniority of this publication's

authors, one would expect more articles about the state of the workforce and professional education and training (Smith, 1991, p. 38). The passage of the Defense Acquisition Workforce Improvement Act by Congress in 1991 clearly displayed congressional interest in the Department of Defense's acquisition professionals. One would expect *Contract Management* magazine to have many more professional/educational articles. *Contract Management* is a monthly magazine published by the National Contract Management Association, the same organization that publishes the *National Contract Management Journal*.

A summary of this analysis of the TYPE OF ARTICLE category indicates: (1) practical articles are emphasized in the literature, and (2) the number of professional articles is quite low. Figure 3-3 displays the breakdown of the NATURE OF ARTICLE category. Thirty-eight (58%) articles are normative, or prescriptive, and 27 (42%) are positive, or descriptive. One explanation for the emphasis on normative articles may lie in the motivation of someone to write an article. Suggesting a new approach, or clarifying one that is not well understood appears to be a motivator for authors. To simply describe a well-known existing approach is not the intent of most articles. Rather, most articles suggest a particular course of action. Often, but not always, the recommended course of action is a new one, or a modification to a current approach. Most authors recommend a new approach to a particular problem, or a modification to an existing model; they write normative, or prescriptive, articles. For example, David

Christensen's article "Determining an Accurate Estimate at Completion" suggests that different estimate at completion formulas are appropriate in different situations.

Many articles contain elements of both a positive and a normative approach. That is,



they are both descriptive and prescriptive. This researcher categorized the article as to

NATURE OF ARTICLE according to the main goal of the article. If an article gave an extensive description of a particular situation, but then made a strong call to action, and articulated a particular approach to take, then the article was categorized as normative.

For example, in “*Winstar and Yankee Atomic: The Government’s Power to Retroactively Alter Contracts*,” much of the article focuses on describing the *Winstar* and *Yankee Atomic* court cases and four doctrines the U.S. Government may use to avoid its contractual obligations due to the subsequent sovereign actions of the Government, such as changing the law. Much of this article is descriptive in nature. However, the article offers specific actions for Government contractors to take in order to limit the Government’s ability to retroactively alter contracts. As such, the article was classified as normative, or prescriptive.

Sweeney and Smith’s earlier findings on NATURE OF ARTICLE were very dissimilar from those of this researcher. Sweeney found the 67 articles published from 1984 through 1989 to be 39 percent normative and 61 percent positive (Sweeney, 1989, p. 40). In his classification of 346 *National Contract Management Journal* articles from 1966 through 1983, and in 1990, Smith determined 42 percent to be normative and 58 percent to be positive (Smith, 1991, p.39). This researcher found the 65 articles from 1991 through 1999 to be 58 percent normative and 42 percent positive. Articles published in the 1990s have tended to be more prescriptive in nature than the ones published earlier.

Within the theoretical category, 16 (59%) articles were classified as normative and 11 (41%) as positive. One might expect many theoretical articles to recommend changes as follow-on to a description of a concept or a theory.

Within the practical category, 22 (63%) articles were classified as normative and 13 (37%) as positive. Practical-normative articles generally suggest changes that could be

implemented at lower levels than theoretical-normative articles. This result indicated that the vast majority of articles written for practical use are improvement-oriented, rather than descriptive of existing processes and regulations.

Within the professional category, three (100%) articles were positive. One of the positive articles discussed the professionalization of the Department of Defense's acquisition and contracting workforce and the Defense Acquisition Workforce Improvement Act from a Congressman's perspective (Mavroules, 1991, p. 24). A second article discussed competency-based learning for members of the Department of Defense's acquisition workforce (Hawkins, 1997, p. 10).

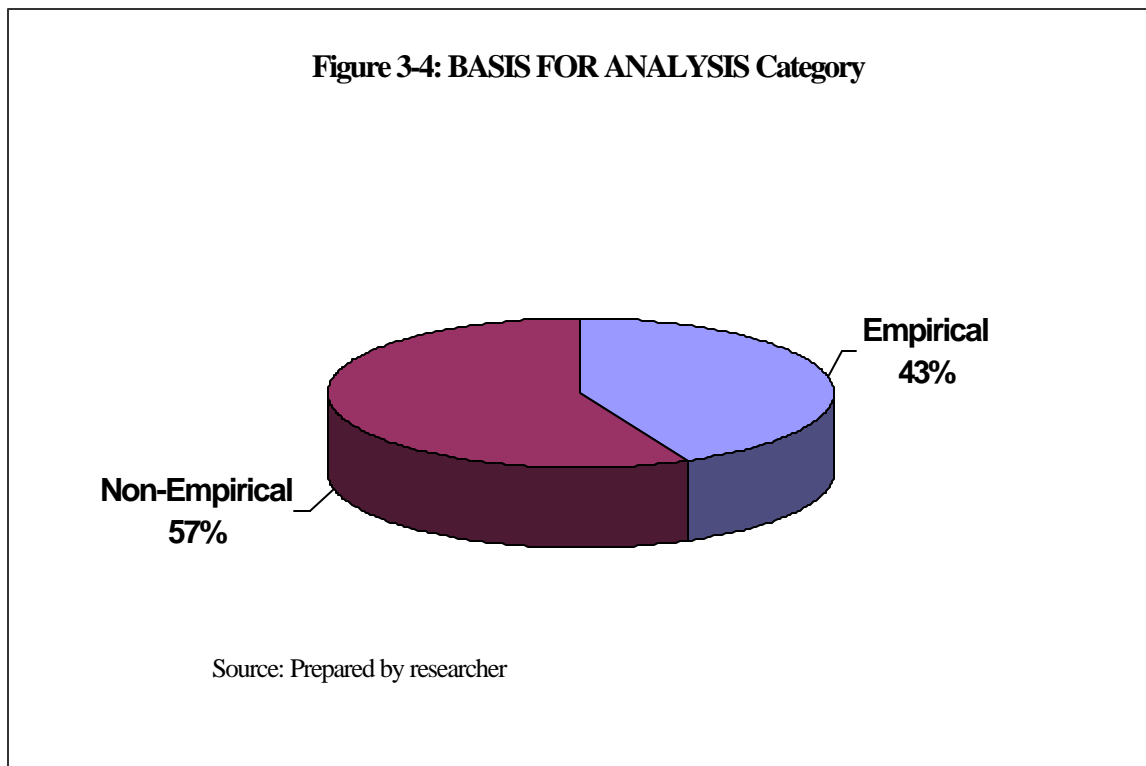
Of the 38 articles classified as normative, or prescriptive, 16 (42%) were theoretical, 22 (58%) were practical, and none were professional/educational. Slightly more than half of the authors who advocate change do so at the level of the typical manager or practitioner.

National Contract Management Journal authors are directing most, but not all, of their articles toward working level managers or contracting practitioners.

A summary of this discussion of the NATURE OF ARTICLE category indicates: (1) a majority of the articles are prescriptive rather than descriptive, and (2) when an article is practical, it usually recommends change or action, rather than being merely descriptive in nature.

Figure 3-4 depicts the breakdown of the BASIS FOR ANALYSIS category: 28 (43%) articles are empirical and 37 (57%) are non-empirical. The predominance of non-empirical articles indicates the majority of authors do not support their positions or

recommendations with empirical evidence. Instead, they generally rely on the force of their opinion, judgment and experience for support. (Smith, 1989, p. 44) *The National Contract*



Management Journal does not appear to require empirical support from its authors.

Empirical support is important because it enhances the credibility of the author's position. Sweeney observed that:

Articles based on empirical evidence are more convincing and better documented. Articles based on non-empirical evidence are generally more subjective and often based on personal opinion. (Sweeney, 1989, p. 28)

David A. Christensen and Scott R. Heise's article "Cost Performance Index Stability" illustrates the value of empirical evidence. The authors suggest that the cost performance index is relatively stable after a program reaches the 20 percent completion point. It is very seldom that a contractor improves markedly on this index after the program is 20 percent complete. They use empirical data from the Defense Acquisition Executive Summary (DAES) database to support their theory about the stability of the cost performance index. The empirical evidence enhances the credibility of their conclusion.

Empirical evidence is less important in positive articles, since the author is not advocating action. Nevertheless, it supports the author's description of a particular process or approach (Smith, 1991, p.45).

Of the 28 articles classified as empirical, 14 (50%) articles were normative and 14 (50%) were positive. The 14 normative-empirical articles represent 37 percent of all normative articles, and the 14 positive-empirical articles represent 52 percent of all positive articles. Positive articles have a greater tendency than normative articles to use empirical evidence.

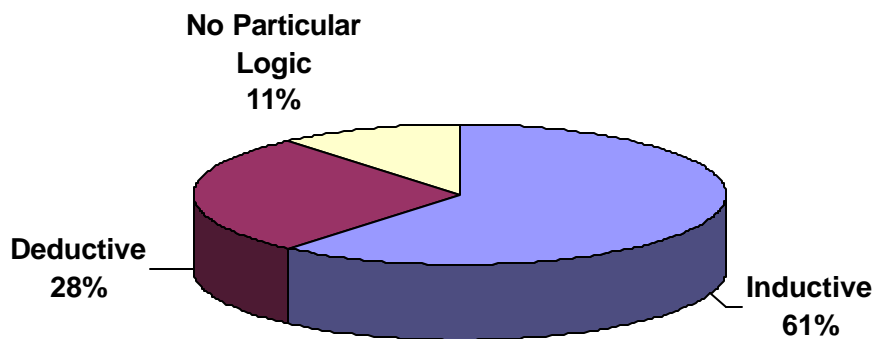
A summary of this discussion of the BASIS FOR ANALYSIS indicates that empirical evidence was used in less than half of the articles.

Figure 3-5 depicts the breakdown of the APPROACH TO REACHING CONCLUSIONS category: 40 (61%) articles are inductive, 18 (28%) are deductive, and seven (11%) exhibit no particular logical approach. The vast majority of articles showed some logical approach; 58 (89%) articles used either inductive or deductive logic. When a logical

approach was used, it was usually inductive. The authors would “argue points from details of specific cases and then make general statements about a larger issue.” (Sweeney, 1989, p. 44) Recall that “inductive” suggests arguing from the specific to the general and “deductive” suggests arguing from the general to the specific.

The number of articles classified as demonstrating no particular logical approach is very low. The first consideration in evaluating an article for its APPROACH TO REACHING

Figure 3-5: APPROACH TO REACHING CONCLUSIONS Category



Source: Prepared by researcher

CONCLUSIONS is whether or not there are any conclusions.

Many of the articles exhibiting no particular logic are purely descriptive and do not state conclusions. This type of article usually does not require logical support and is classified as demonstrating no particular logic.

There were 22 (85%) positive articles that presented some form of logical approach to reaching conclusions. Of these, nine (41%) articles were theoretical, 11 (50%) articles were practical, and two (9%) were professional. This result indicates that when a logical approach is used in a descriptive article, the article is slightly more likely to be practical rather than theoretical.

One would expect normative, or prescriptive, articles to employ a logical approach at a higher rate than positive (descriptive) articles did. Sweeney suggests that normative (prescriptive) articles are expected to provide some sort of logical argument to support the recommended process (Sweeney, 1989, p. 45).

The results indicate this expectation is valid. Only two (5%) of 38 normative articles were classified as demonstrating no particular logic in their APPROACH TO REACHING CONCLUSIONS. This result indicates an author recommending change almost always present his case with some sort of logical approach. This is particularly important, given that empirical evidence was used in less than half of *National Contract Management Journal* articles as a whole. If an author is advocating a particular action and does not use empirical evidence, he should at least use a logical approach to support his reasoning.

Another expected result is that very few articles classified as demonstrating no particular logic would be empirical articles. The use of empirical evidence indicates some form of logical approach, often a deductive approach. The results validate this expectation. There was only one article using an empirical BASIS FOR ANALYSIS that had no particular logic as the APPROACH TO REACH CONCLUSIONS.

A summary of this discussion of the APPROACH TO REACHING CONCLUSIONS category indicates: (1) most articles display a logical approach in reaching conclusions, (2) when a logical approach is used, it is usually inductive, and (3) articles that display no particular logical approach are usually positive (descriptive) articles.

2. Subject Matter Results

This subsection examines the subject matter content of the articles. Analysis of the number of articles assigned to various subject categories should indicate what subject matter has been emphasized in the *National Contract Management Journal*.

The 1989 National Contract Management Association Body of Knowledge is divided into three levels. The most general level divides the Body of Knowledge into three general groups. The second level divides it into nine areas that are more specific. The third level divides it into 69 specific subject modules.

This analysis will be conducted consistent with the organization of the Body of Knowledge. The results will be analyzed at the most general level of classification first, and at the most specific level last.

Table 3-1 indicates the modules are divided into three groups: BASIC TOOLS AND FUNCTIONS, CONTRACTS AND PROCUREMENT, and SPECIAL TOPICS AND CONSIDERATIONS. Analysis of these groups will indicate which have been emphasized in the literature.

TABLE 3-1: NUMBER OF ARTICLES ASSIGNED TO MODULES

I. BASIC TOOLS AND FUNCTIONS

ECONOMICS

<u>Module</u>	<u>Description</u>	<u>Articles Assigned</u>
1	Macroeconomic Concepts	0
2	Microeconomic Concepts	1
3	Industrial Organization.....	0
4	Labor Economics.....	0

ACCOUNTING AND FINANCE

5	Cost Accounting Basics.....	0
6	Cost Accounting Standards	2
7	Elements of Business Finance	0
8	Financial Reports	0
9	Break-Even Analysis	0
10	Make or Buy Analysis	1

MATERIALS AND OPERATIONS

11	Elements of Production.....	0
12	Elements of Industrial Marketing.....	0
13	Elements of Logistics.....	1
14	Elements of Inventory Management	0
15	Surplus and Excess Property.....	0
16	Materials Management	2

COMMERCIAL LAW (UCC)

17	Elements of a Contract	0
18	Terms and Conditions	0
19	Agency	0
20	Warranties	0
21	Unconscionability.....	0

22	Breaches and Remedies	0
	Total.....	7

TABLE 3-1(cont.): NUMBER OF ARTICLES ASSIGNED TO MODULES

II. CONTRACTS AND PROCUREMENT

MANAGEMENT

<u>Module</u>	<u>Description</u>	<u>Articles Assigned</u>
23	Procurement Organization & Management.....	2
24	The Procurement Process.....	5
25	Statutory & Regulation Foundation.....	2
26	The Contracting Officer.....	2

PRE-AWARD

27	Acquisition Planning	0
29	Requirements Determination.....	2
30	Solicitations, Bids, Awards.....	1
33	Contract Types	5
34	Source Selection	1
37	General Contract Provisions	3
38	Source Development	2
41	Standards & Specifications.....	0
42	Negotiating Strategies.....	0
45	Patents & Data Rights	0
46	Cost & Price Analysis	1

POST-AWARD

28	Contract Administration.....	0
31	Financial Management of Contracts	2
32	Changes.....	2
35	Quality Assurance	0
36	Terminations	1
39	Inspection, Acceptance & Warranties.....	0
40	Claims, Disputes, & Appeals	7
43	Monitoring Contract Performance.....	0
44	Contract Closeout	0
47	Contract Auditing.....	2
48	Acquisition Management Information Systems.....	0

Total.....40

TABLE 3-1 (cont.): NUMBER OF ARTICLES ASSIGNED TO MODULES

III. SPECIAL TOPICS AND CONSIDERATIONS

SPECIAL TOPICS

<u>Module</u>	<u>Description</u>	<u>Articles Assigned</u>
49	Budgeting for Procurement	1
50	Systems Acquisitions	1
51	Program/Project Management	0
52	Productivity.....	0
53	Automated Procurement.....	1
54	Ethics, Conflict of Interest.....	1
55	Value Analysis	1
56	Safety, Reliability & Maintainability.....	0
57	Socioeconomic Objectives	1
58	Small & Minority Business Development.....	1
59	Vendor's Management System Audit	0
60	Subcontracting & Subcontract Management	0
61	Commercial & Industrial Products	1
62	Small Purchases	1
63	International Purchasing.....	2
64	Government Property.....	0

SPECIAL CONSIDERATIONS

65	Considerations in Architect & Engineer Contracting	0
66	Considerations in Construction Contracting.....	0
67	Considerations in Services Contracting	2
68	Considerations in R & D Contracting.....	3
69	Considerations in ADP Contracting	2

Total.....18

Source: Researcher's analysis

Figure 3-6 depicts the assignment of articles to the three module groups. There were seven (11%) articles assigned to the BASIC TOOLS AND FUNCTIONS group; 40 (62%)

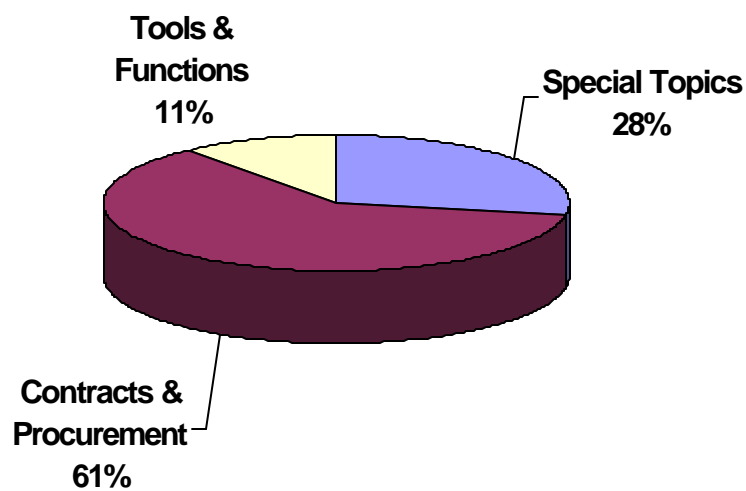
articles assigned to the CONTRACTS AND PROCUREMENT group; and 18 (28%) articles assigned to the SPECIAL TOPICS AND CONSIDERATIONS group.

The predominance of the CONTRACTS AND PROCUREMENT group indicates the *National Contract Management Journal* focuses mostly on topics usually considered the core of the Body of Knowledge. The share of articles dedicated to the BASIC TOOLS AND FUNCTIONS (11%) and SPECIAL TOPICS AND CONSIDERATIONS (28%) indicates the *National Contract Management Journal* may or may not be comprehensive in its coverage of the Body of Knowledge. Analysis at lower levels of classification may determine which is the case.

Analysis of each group provides more information about the focus of the literature. Analysis of the seven articles in the BASIC TOOLS AND FUNCTIONS group indicates there is one (14%) article on an economic subject, three (43%) on Accounting and finance subjects, three (43%) on materials and operations subjects, and none on commercial law subjects. This indicates there are some interface between contracting discipline and the accounting, finance, materials, and operations disciplines. The interface with the fields of economics and commercial law is much less. This suggests practitioners in the contracting field should strive to develop skills in accounting, finance, materials, and operations. The dearth of articles on commercial law may indicate that although this category of subject is defined as part of the Government contracting Body of Knowledge, authors for the *National Contract Management Journal* may not consider commercial law an important topic area for people in the field of Government

contracting. A case can be made that commercial law does not apply very well to Government contracting, and that is why it receives little emphasis. This may be expected to change in the

Figure 3-6: Module Category Groups



Source: Prepared by researcher

future, given recent efforts to adopt "Best Commercial Practices" and to make Government acquisition more similar to the commercial sector. Another possibility is that the lack of commercial law articles from 1991 to 1999 is not significant. It may be due to the fact that only 65 articles were published during the research period, and with such a small number, the lack of commercial law coverage is not significant. Commercial law is only one of the nine subject areas at the intermediate level.

Analysis of the 40 articles in the CONTRACTS AND PROCUREMENT group indicates there are 11 (28%) articles on management subjects, 15 (38%) on pre-award subjects, and 14 (35%) on post-award subjects. None of these groups can be described as dominant. The roughly equal number of post-award versus pre-award articles, however, is surprising, given that many people believe that the pre-award phase receives a disproportionate share of attention.

Analysis of the 18 articles in the SPECIAL TOPICS AND CONSIDERATIONS group indicates there were 11 (61%) articles on special topics and seven (39%) on special considerations.

Table 3-1 lists the number of articles assigned to each individual module. These results clearly indicate the degree to which specific subjects have been emphasized in the literature. To analyze further, this researcher will define a subject as having been emphasized in the literature if it was the subject of two or more articles.

There were 18 modules with two or more articles assigned. Only two (11%) of these modules are in the BASIC TOOLS AND FUNCTIONS group. They contained four of seven (57%) articles assigned to this group. The modules are (with the number of articles assigned to each module in parentheses):

- Module 6: Cost Accounting Standards (2)
- Module 16: Materials Management (2)

Twelve (67%) of the modules with two or more articles are in the CONTRACTS AND PROCUREMENT GROUP. They contained 35 of 40 (88%) articles assigned to the group.

The modules are:

- Module 40: Claims, Disputes, and Appeals (7)
- Module 24: The Procurement Process (5)
- Module 33: Contract Types (3)
- Module 37: General Contract Provisions (3)
- Module 23: Procurement Organization and Management (2)
- Module 25: Statutory and Regulatory Foundation (2)
- Module 26: The Contracting Officer (2)
- Module 29: Requirements Determination (2)
- Module 31: Financial Management of Contracts (2)
- Module 32: Changes (2)
- Module 38: Source Development (2)
- Module 47: Contract Auditing (2)

Four (22%) of the modules with two or more articles assigned are in the SPECIAL TOPICS AND CONSIDERATIONS group. They contain nine of 18 (50%) articles assigned to this group. The modules are:

- Module 68: Considerations in Research and Development Contracting (3)
- Module 63: International Purchasing (2)
- Module 67: Considerations in Service Contracting (2)

- Module 69: Considerations in Automated Data Processing (ADP) Contracting (2)

The most common subject area was claims, disputes, and appeals. This was the subject matter of seven of the 65 articles, or 11 percent of the total. Some of these articles deal with the claims process itself, but several articles focus on Alternative Dispute Resolution (ADR) as a good option to use instead of the formal claims process, which is expensive and slow. Other forms of dispute resolution than litigation were encouraged in the Disputes Resolution Act. For many, this is a new, potentially valuable tool, so it has received much emphasis in the *National Contract Management Journal* in the 1990s.

The second most common subject area was the procurement process. This was the subject matter of five of the 65 articles, or eight percent of the total. Federal Government contracting is fairly process oriented, so this topic is one that is written about frequently. In addition, the subject category is a fairly broad one, which is another reason several articles fit into it well.

Contract type was the subject of four articles, or six percent of the total. Understanding different types of contracts helps practitioners to choose the best one for a particular situation; so one would expect good coverage of this area. Additionally, recent focus on award fee contracts and other transaction authority has provided new information to the contracting community.

This analysis indicates nine percent of the modules in the BASIC TOOLS AND FUNCTIONS group contain 57 percent of the articles assigned to this group; 46 percent of the

modules in the CONTRACTS AND PROCUREMENT group contain 90 percent of the articles assigned to this group: and 19 percent of the modules in the SPECIAL TOPICS AND CONSIDERATIONS group contain 50 percent of the articles assigned to this group.

Cumulatively, 75 percent of the articles were assigned to only 26 percent of the modules. This analysis suggests that most of the literature published in the *National Contract Management Journal* is dedicated to a small part of the Body of Knowledge.

This researcher also conducted a frequency analysis on the results in Table 3-1. The results of this analysis indicate 34 (49%) modules had zero articles assigned; 17 (25%) modules had one article assigned; 13 (19%) modules had two articles assigned; two (3%) modules had three articles assigned; and three (4%) modules had four or more articles assigned. Figure 3-7 displays this information. The three modules that have four or more articles assigned will be examined further in the next section.

These figures indicate that slightly under half (49%) of the subject areas had no articles assigned, and slightly over half (51%) had one or more articles assigned. Nearly half of the subject areas were not written about during this period. This result is not surprising, given there were only 65 articles classified and 69 subject modules. Even if just a small number focus on particular subject areas, others cannot be covered at all.

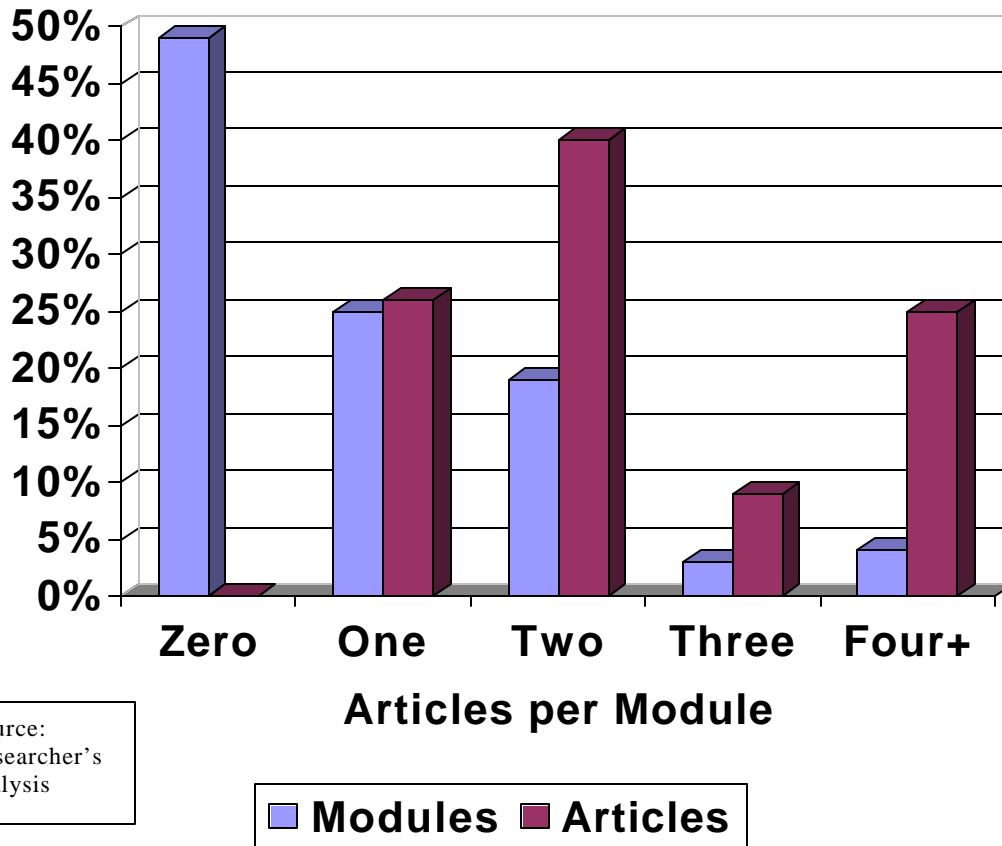
This analysis also indicates 17 (26%) articles were assigned to modules with one article assigned; 26 (40%) articles were assigned to modules with two articles assigned; six (9%)

articles were assigned to modules with three articles assigned; and 16 (25%) articles were assigned to modules with four or more articles assigned. Figure 3-7 displays this information.

The preceding analysis of the subject matter content of the articles published in the *National Contract Management Journal* suggests that although the literature covers a somewhat diverse range of subjects, the authors seem to emphasize certain topics over others within this range. The literature classified by this researcher does not comprehensively cover the Body of Knowledge. Some of this is due to the fact that only nine years of literature were classified, but part of the lack of comprehensive coverage is due to fewer articles being published in the *National Contract Management Journal*. The average number of articles published per year is lower in the 1990s than in earlier years. Smith noted a declining trend in the number of published articles even before the 1990s.

From 1966 to 1971, an average of 14.7 articles per year was published. From 1972 to 1977, an average of 20 articles per year was published. From 1978 to 1983, an average of 20.8 articles per year was published. From 1984 to 1989, an average of 13.3 articles per year was published. (Smith, 1991, p. 83) The downward trend in number of articles published per year since the 1978 to 1983 time period has continued. From 1991 to 1999, an average of 7.2 articles per year was published. The trend toward fewer articles is surprising, especially in the 1990s. This researcher expected that given recent legislation such as the Federal Acquisition Streamlining Act of 1994 and the Federal Acquisition Reform Act, and other Federal acquisition reform measures, that more articles would be published, rather than fewer.

Figure 3-7: Modules vs. Articles



In summary, this analysis of the subject matter content of the literature published in the National Contract Management Journal from 1991 through 1999 leads to the following conclusions: (1) the literature touches just under half of the subjects identified in the Body of Knowledge, (2) most of the literature is dedicated to a small part of the Body of Knowledge, (3) subjects in the CONTRACTS AND PROCUREMENT group dominate the literature, (4)

accounting, finance, materials, and operations dominate the BASIC TOOLS AND FUNCTIONS group, (5) neither management, pre-award, nor post-award subjects dominate the CONTRACTS AND PROCUREMENT group, (6) neither special topics nor special considerations dominate the SPECIAL TOPICS AND CONSIDERATIONS group, and (7) 18 specific subject modules are emphasized in the literature.

3. Hybrid Results

This subsection examines hybrid results generated by examining both subject matter and taxonomic information other than subject matter. The results are hybrid because subject matter classification or Sweeney's Taxonomy alone could not generate them.

Figures 3-8 and 3-9 display how articles dedicated to the two most common subject matter categories emphasized in the literature were classified using Sweeney's Taxonomy. Analysis of these same results should identify how articles about the same subject matter were classified.

Each subject matter category was analyzed to determine which TYPE OF ARTICLE, NATURE OF ARTICLE, BASIS FOR ANALYSIS, and APPROACH TO REACHING CONCLUSIONS categories were used most often. In only three of the 18 most popular subject areas, was empirical evidence used at least half of the time as the BASIS FOR ANALYSIS to support the author's conclusions.

For the purpose of this analysis, only subject categories with five or more articles assigned will be addressed in greater detail. For subject categories with fewer than five articles assigned, analysis provides less information of value.

Figure 3-8 indicates articles that emphasize the procurement process are all theoretical and non-empirical. Most (80%) are normative. Michael Heberling's article "Open Issues in Acquisition Reform" is representative of this type of article. The procurement process is a general topic, so it is not surprising that most of these articles are theoretical rather than practical.

FIGURE 3-8: THE PROCUREMENT PROCESS (MODULE 24)

Nature of Article	Normative (Prescriptive)						Positive (Descriptive)						
Basis for Analysis	Empirical			Non-Empirical			Empirical			Non-Empirical			
Approach to Reach Conclusions	I	D	NPL	I	D	NPL	I	D	NPL	I	D	NPL	Total
Theoretical/Conceptual				2	1	1					1		5
Practical/Managerial													
Professional/Education													
Total				2	1	1							5

I = Inductive reasoning D = Deductive reasoning NPL = No Particular Logic

Source: researcher's analysis

Figure 3-9 indicates articles regarding claims, disputes and appeals are mostly practical-normative (71%). Only one of these articles uses an empirical basis for analysis. Both of the positive articles are purely descriptive, and do not employ a particular logical approach to reach conclusions (29%). The inductive approach to reach conclusions (57%) is more common than a deductive approach (14%). Several of these articles focus on Alternative Dispute Resolution (ADR), a non-judicial approach to settle claims more quickly and less expensively than through the court system. Legislation promoted the use of alternative dispute resolution, but legislation alone does not teach people how to do something new. Several of the practical-normative articles, which dominate this category, encourage the use of alternative dispute resolution, and describe how to do it. This analysis of the subject matter categories emphasized in the *National Contract Management Journal* indicates most of the articles in most of the subject areas tend to be theoretical, normative, non-empirical, and either inductive or deductive. This is not surprising, since earlier analysis led to the conclusion that most of the literature was theoretical, normative, non-empirical, and based on inductive or deductive logic. This analysis has shown that some of the subject areas have their own classification tendencies. Since most subject areas had such a small number of articles assigned, classification tendencies are not all that pronounced. Classifying a larger number of articles would probably lead to more details on tendencies in the literature.

FIGURE 3-9: CLAIMS, DISPUTES AND APPEALS (MODULE 40)

Nature of Article	Normative (Prescriptive)						Positive (Descriptive)						
Basis for Analysis	Empirical			Non-Empirical			Empirical			Non-Empirical			
Approach to Reach Conclusions	I	D	NPL	I	D	NPL	I	D	NPL	I	D	NPL	Total
Theoretical/Conceptual													
Practical/Managerial	1			3	1							1	6
Professional/Education												1	1
Total	1			3	1							2	7

I = Inductive reasoning D = Deductive reasoning NPL = No Particular Logic

Source: researcher's analysis

J. SUMMARY

This chapter provided a summary analysis of the results of applying Sweeney's Expanded Taxonomy to articles published in the *National Contract Management Journal* from 1991 to 1999.

This analysis was presented in three parts. The first part analyzed the taxonomical results generated by the categories in Sweeney's Taxonomy. The second part analyzed the results of classifying the literature by subject matter. The final part analyzed hybrid results

generated by considering both subject matter and the other taxonomical categories. This analysis led to conclusions about the literature.

The next chapter will present a summary analysis of the articles published in the *Journal of Supply Chain Management* from 1987 to 2000.

IV. SUMMARY ANALYSIS OF JOURNAL OF SUPPLY CHAIN MANAGEMENT ARTICLES

A. INTRODUCTION

There were 292 articles published in the *Journal of Supply Chain Management* in Volume 23, Issue 1 (1987) through Volume 36, Issue 1 (2000). Sweeney's Expanded Taxonomy was applied to each article. Analysis of the results of applying the expanded taxonomy will provide information about patterns and trends in the literature of this periodical, which is targeted toward commercial purchasing.

Sweeney's Expanded Taxonomy is an effective structure for classifying contracting literature. Using this taxonomy will allow the researcher to gain an understanding of the *Journal of Supply Chain Management* in recent years (from 1987 to early 2000).

Sweeney's Expanded Taxonomy will be used to classify these articles rather than using the Williams and Oumlil approach. Use of Sweeney's Expanded Taxonomy provides more complete information about the literature. Because Sweeney's Expanded Taxonomy includes most of the classification categories that Williams and Oumlil used, comparisons will be possible between this researcher's results and those of Williams and Oumlil.

In keeping with the Williams and Oumlil approach, case history will be considered a TYPE OF ARTICLE. Furthermore, a comparison of these recent journal articles can be made with the articles previously studied by Williams and Oumlil.

B. APPLICATION OF SWEENEY'S EXPANDED TAXONOMY

Application of the expanded taxonomy is fairly straightforward, subject to the limitations described in Chapter II. The 292 articles that were published in the *Journal of Supply Chain Management* from Volume 23, Issue 1 (1987) to Volume 36, Issue 1 (2000) were classified using Sweeney's Expanded Taxonomy.

Applying the taxonomy is a two-step process. First, the researcher assigned an article to one of the categories in Sweeney's classification matrix, expanded to include case history as a TYPE OF ARTICLE. Second, the researcher assigned an article to one of Williams and Oumlil's subject matter categories.

Sweeney suggests that as each article is reviewed, the following questions should be kept in mind (Sweeney, 1989, p. 37):

- Is the article empirical? Is it based on some kind of random sample, extensive observation, or substantial use of statistical theory?
- Is the article descriptive (positive)? Does it explain or describe how some existing process works? Or is it prescriptive (normative)? Does it propose the way a process should work, how the design of some system/process should be changed to make it better?
- Does the author reason from specific cases to a statement or assertion about an entire group or class of things (inductive logic)? Or does the author describe how an entire class of things works and deduces from that this particular item should thus operate in a similar manner (deductive logic)? Or does the author apply any type of logic at all? The article may be purely descriptive.

- Is the article about an intangible, conceptual, more abstract theory (theoretical)? Or is it more immediately useful, practical, and important to the routine function of the manager (practical)?
- Does the article concern neither practical nor theoretical concepts, but rather professional areas such as certification, advancement, or educational issues (professional/educational)?

Since the classification effort also includes subject matter classification, other questions must be addressed to complete the classification process (Smith, 1991, p. 32):

- What is the subject matter thrust of the article?
- Which of the subject matter categories best represents the thrust of the article?

Applying the taxonomy results in the assignment of an article to one of 36 categories in the taxonomy matrix and one of 28 subject matter categories or subcategories.

C. SUMMARY ANALYSIS

This summary analysis will be presented in three subsections. The first subsection will examine the taxonomical classification results generated by the categories in Sweeney's Taxonomy, expanded to include case history as a TYPE OF ARTICLE. The second subsection will evaluate the results generated by classifying the subject matter of each article. The final subsection will analyze the hybrid results generated by Sweeney's Expanded Taxonomy.

1. Taxonomical Results

Figure 4-1 is a summary of the results of applying Sweeney's Taxonomy to the literature. The articles were classified by TYPE OF ARTICLE (theoretical, practical, case history, or professional), NATURE OF ARTICLE (normative or positive), BASIS FOR ANALYSIS (empirical or non-empirical), and APPROACH TO REACHING CONCLUSIONS (inductive, deductive, or no particular logic).

FIGURE 4-1: SUMMARY OF ARTICLE CLASSIFICATION

Nature of Article	Normative (Prescriptive)						Positive (Descriptive)						Total
Basis for Analysis	Empirical			Non-Empirical			Empirical			Non-Empirical			
Approach to Reach Conclusions	I	D	NPL	I	D	NPL	I	D	NPL	I	D	NPL	
Theoretical/ Conceptual	10			9	19	2	78		1	19	6	5	149
Practical/ Managerial	20	1	1	3	41	4	35			7	2	5	119
Case History	2			5			4			5		2	18
Professional/ Educational							5					1	6
Total	32	1	1	17	60	6	122		1	31	8	13	292

Normative = 117

Positive = 175

Empirical = 157

Non-Empirical = 135

Inductive = 201

Deductive = 70

No Particular Logic = 21

I = Inductive reasoning

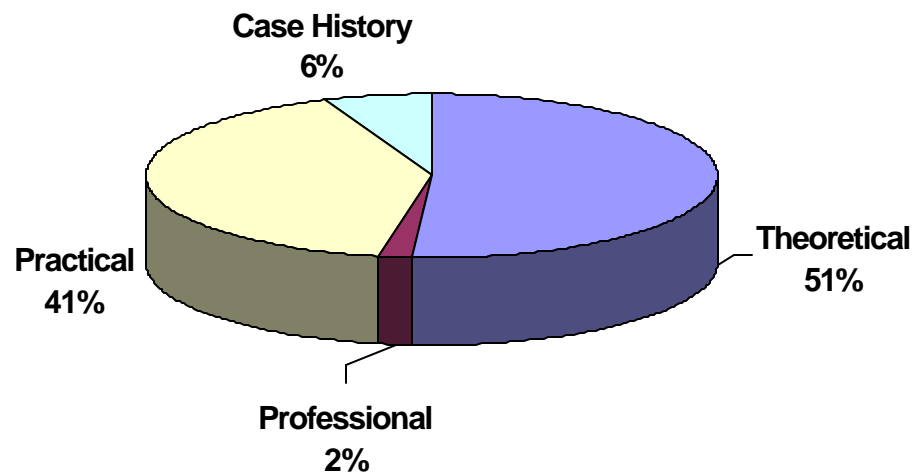
D = Deductive reasoning

NPL = No Particular Logic

Source: Researcher's analysis

Analysis of the four main categories in Sweeney's Taxonomy yields valuable information about the focus of contracting literature. Figure 4-2 is a breakdown of the TYPE OF ARTICLE category: 149 (51%) articles are theoretical, 119 (41%) are practical, 18 (6%) are case histories, and six (2%) are professional.

Figure 4-2: TYPE OF ARTICLE Category



It is clear that theoretical articles are emphasized in the *Journal of Supply Chain Management*. This is not surprising, given the scholarly nature of the publication.

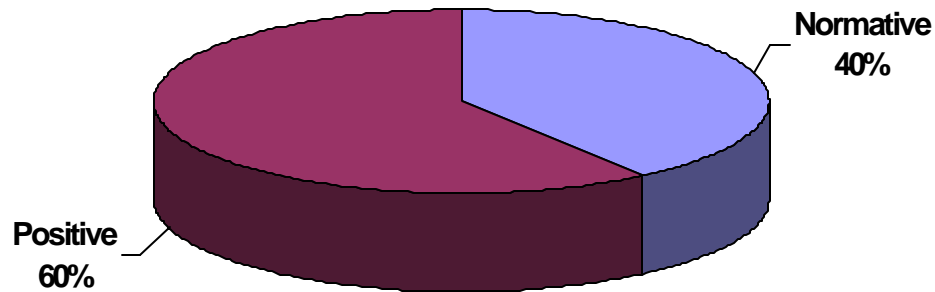
Based on their biographies, almost all of the authors are academics in the field of purchasing, marketing, or supply chain management. Most of the authors are not involved in the hands-on, practical aspects of purchasing. As academics, they are involved with the more theoretical aspects of the field. For these authors, the *Journal of Supply Chain Management* provides a forum for the communication of ideas, opinions and approaches that could have a substantial impact on the field of purchasing. Case histories were only six percent of all the articles. Case histories focus in-depth on one particular firm or industry. The small number of case history articles may indicate that authors, for the most part, want their articles to apply to a broader spectrum of readers. Most articles are targeted towards commercial purchasing

personnel in general, rather than those employed in purchasing in a particular industry. If the case history category had not been used, almost all of the case history articles would have been categorized as practical/managerial.

The small number of professional/educational articles is notable. They make up just two percent of the total. Articles dealing with professional growth would not necessarily be included in the *Journal of Supply Chain Management*. Professional growth articles are more often found in publications such as *Purchasing* magazine. One would expect *Purchasing* magazine to have many more professional/educational articles. *Purchasing* magazine is a biweekly magazine targeted toward the commercial purchasing community. The small number of professional/educational articles in this periodical may indicate that this type is not considered scholarly, or that the academics that author most of the articles are not concerned about this area.

A summary of this analysis of the TYPE OF ARTICLE category indicates: (1) theoretical articles are emphasized in the literature, (2) the number of case history articles is low, and (3) the number of professional articles is very low.

Figure 4-3: NATURE OF ARTICLE Category



Source: Prepared by researcher

Figure 4-3 displays the breakdown of the NATURE OF ARTICLE category: 117 (40%) articles are normative, or prescriptive, and 175 (60%) are positive, or descriptive. One explanation for the emphasis on positive articles may lie in the complexity of the purchasing field. The field includes diverse topic areas as evidenced by the breadth of the subject categories. Practitioners in purchasing must have a working knowledge of many of these subject areas. The *Journal of Supply Chain Management* provides a way to discuss these subjects in ways useful to the practitioner.

Many articles contain elements of both positive and normative approaches. That is, they are both descriptive and prescriptive. This researcher categorized the article as to

NATURE OF ARTICLE according to the main goal of the article. If an article gave an extensive description of a current situation and did not make a strong call to action, including particular actions to take, then the article was categorized as positive.

For example, in Richard Germain's article "The Context, Organizational Design and Performance of JIT Buying Firms Versus Non-JIT Buying Firms," (Spring 1998, Volume 34, Issue 2, pp.12-18) much of the article focuses on describing survey results from companies that use just in time (JIT) buying practices and companies that do not. JIT firms reported holding less inventory than non-JIT companies. The article details some internal organizational design differences between JIT and non-JIT firms. Much of the article is descriptive in nature. The article does not offer specific ideas for implementing a just in time buying approach. As such, the article was classified as positive.

Williams and Oumlil's earlier findings on TYPE OF ARTICLE are very different from those of this researcher. In their classification of 472 *Journal of Supply Chain Management* articles published from 1965 to 1986, they found 65 percent of the articles to be normative and 35 percent to be positive (Williams, 1987, p. 25). This researcher found the 292 articles published from 1987 to early 2000 to be 40 percent normative and 60 percent positive. Williams and Oumlil (Williams, 1987, p. 26) suggested that the high percentage of prescriptive articles "is indicative of the relative immaturity of the purchasing discipline". They correctly predicted a higher percentage of positive articles in the future. A detailed listing of how Williams and Oumlil classified particular articles no longer exists (Williams, 1998).

Within the theoretical category, 40 (27%) articles were classified as normative and 109 (73%) as positive. One might expect many theoretical articles to describe a concept or a theory. This researcher classified many articles as theoretical-positive. These articles did not have well-articulated recommendations for change and were not directly applicable to purchasing practitioners, so they qualified as theoretical-positive.

For example, Robert J. Trent's article "Purchasing and Supply Management: Trends and Changes Throughout the 1990s" (Fall 1998, Volume 34, Issue 4, pp. 2-11) notes the trends in areas including performance improvement requirements, purchasing organization, and purchasing responsibilities and activities. Using survey data collected yearly from 1990 to 1997, he notes existing trends and makes projections for 2000. Although he draws some thought-provoking conclusions, he does not recommend particular actions to take in response to his conclusions. His observations are not immediately practical to practitioners, so the article is classified as theoretical-positive.

Within the practical category, 70 (59%) articles were classified as normative and 49 (41%) as positive. Practical-normative articles generally suggest changes that can be implemented at lower levels than theoretical-normative articles. This result indicates that the majority of articles written for practical use are improvement-oriented, rather than describing existing processes.

Within the case history category, seven (39%) articles were classified as normative and 11 (61%) as positive. Most articles described purchasing activity in a particular industry but did

not go on to make specific recommendations for change. As a result, they were classified as positive, or descriptive.

Within the professional category, all six (100%) articles were positive. Two of these six discussed certification programs in general or the Certified Purchasing Manager (CPM) certification in particular. The CPM is a certification offered by the National Association of Purchasing Management. Since that association publishes the *Journal of Supply Chain Management*, it is not surprising to see coverage of the CPM certification.

Of the 117 articles classified as normative, or prescriptive, 40 (34%) were theoretical, 70 (60%) were practical, seven (6%) were case histories, and none were professional/educational. Most of the authors who advocate change do so at the level of the typical practitioner or manager. This indicates that the *Journal of Supply Chain Management* authors are directing most articles to middle and lower level purchasing managers and practitioners.

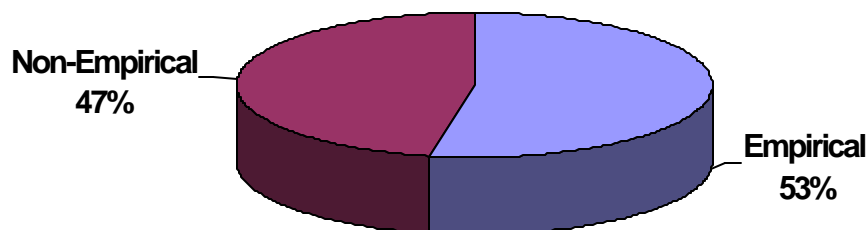
A summary of this discussion of the NATURE OF ARTICLE category indicates: (1) a majority of the articles are descriptive rather than prescriptive, (2) theoretical articles tend to be descriptive, and (3) practical articles tend to be prescriptive.

Figure 4-4 depicts the breakdown of the BASIS FOR ANALYSIS category: 157 (53%) articles are empirical and 135 (47%) are non-empirical. Just over half of the authors support their positions or recommendations with empirical evidence. The *International Journal of Purchasing and Materials Management* appears to encourage empirical support

from its authors. Sometimes this support is in the form of grants for the research. Many articles acknowledge research grants from the National Association of Purchasing Management that supported the particular research effort. Empirical support is important because it enhances the credibility of an author's position. Empirical articles tend to be more convincing than non-empirical ones (Sweeney, 1989, p. 28).

For example, Craig R. Carter's article "Environmental Purchasing: Benchmarking Our German Counterparts" (Fall 1998, Volume 34, Issue 4, pp. 28-38) used a survey of U.S. and German firms to determine and compare current purchasing efforts that consider environmental factors. The extensive survey provides a logical basis for the conclusions Carter makes. The research was funded with a doctoral dissertation grant from the National Association of

Figure 4-4: BASIS FOR ANALYSIS
Category



Source: Prepared by researcher

Purchasing Management.

Empirical evidence is less important in positive articles, since the author is not advocating action. Nevertheless, it provides support for the author's description of a particular process or approach (Smith, 1991, p.45).

Of the 157 articles classified as empirical, 34 (22%) articles were normative and 123 (78%) were positive. The 34 normative-empirical articles represent 29 percent of all normative articles, and the 123 positive-empirical articles represent 70 percent of all positive articles. This indicates empirical evidence is used much more often in positive, or descriptive, articles. This result surprised the researcher, who expected normative articles to use empirical support more often than positive articles. It might be that authors do not believe they can explain the methodology and results of an empirical study and still have room to present a new approach with clear recommendations in one article. The *Journal of Supply Chain Management* limits article length to 4,000 words.

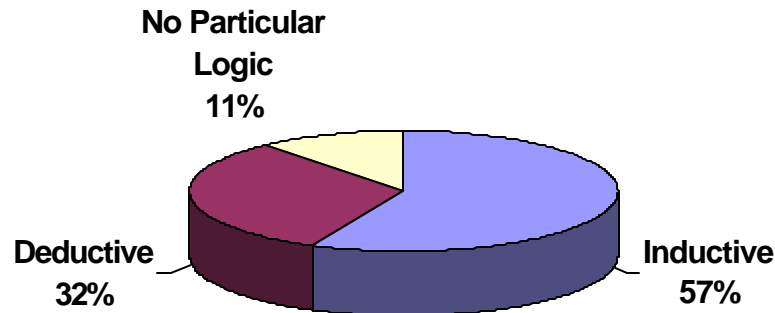
The breakdown of articles by TYPE OF ARTICLE indicates that most empirical articles were also classified as theoretical articles. Of the 157 empirical articles, 89 (57%) were theoretical, 57 (36%) were practical, six (4%) were case histories, and five (3%) were professional/educational. The 89 theoretical-empirical articles represent 60 percent of all theoretical articles, and the 57 practical-empirical articles represent 48 percent of all practical articles. This indicates an author will most likely use empirical evidence in support of theoretical articles.

When authors are addressing fellow academics or senior purchasing managers in theoretical articles, they are much more likely to use empirical evidence than when they are addressing the working level in practical articles. Academics who pen most of the articles may feel a stronger need to empirically support articles intended for their peers. When addressing purchasing practitioners, they may feel less of a need to support their ideas empirically, and may assume the force of their argument will be convincing. Another possibility is that they may feel the practical articles are easier to understand and accept so they do not feel as strong a need to use empirical evidence.

A summary of this discussion of the BASIS FOR ANALYSIS indicates: (1) empirical evidence was frequently used in the literature, (2) empirical evidence was most often used in descriptive articles, and (3) when empirical evidence was used, it was generally to support theoretical presentations.

Figure 4-5 depicts the breakdown of the APPROACH TO REACHING CONCLUSIONS category: 201 (69%) articles are inductive, 70 (24%) are deductive, and 21 (7%) exhibit no particular logic. A logical approach was used in 93 percent of articles overall; the vast majority of articles showed some logical approach. When a logical approach was used, it was usually inductive. The authors would “argue points from details of specific cases and then make general statements about a larger issue.” (Sweeney, 1989, p. 44) Recall that “inductive” suggests arguing from the specific to the general and “deductive” suggests arguing from the general to the specific. The number of articles classified as demonstrating no particular

Figure 4-5: APPROACH TO REACHING CONCLUSIONS Category



Source: Prepared by researcher

logical approach is quite low. The first consideration in evaluating an article for its

APPROACH TO REACHING CONCLUSIONS is whether or not there are any conclusions.

Many of the articles exhibiting no particular logic are purely descriptive and do not state conclusions. This type of article usually does not require logical support and is classified as demonstrating no particular logic.

There were 161 (92%) positive articles that presented some form of logical approach to reaching conclusions. Of these, 103 (64%) articles were theoretical, 44 (27%) articles were practical, nine (6%) articles were case histories and five (3%) were professional. This result indicates that when a logical approach is used in a descriptive article, the article most likely is a theoretical one.

One would expect normative, or prescriptive, articles to employ a logical approach at a higher rate than positive (descriptive) articles did. Sweeney suggests that normative (prescriptive) articles are expected to provide some sort of logical argument to support the recommended process (Sweeney, 1989, p. 45).

The results indicate this expectation is valid. Eight percent of positive articles (14 of 175) were classified as no particular logic, but only six percent of normative articles (7 of 117) were classified as demonstrating no particular logic in their APPROACH TO REACHING CONCLUSIONS. This result indicates an author recommending change almost always present his case with some sort of logical approach. This is particularly important, given that empirical evidence is used in just under half of the *Journal of Supply Chain Management* articles. If an author is advocating a particular action and does not use empirical evidence, he should at least use a logical approach to support his reasoning.

Another expected result is that very few articles classified as demonstrating no particular logic would be empirical articles. The use of empirical evidence indicates some form of logical approach, often an inductive approach. The results validate this expectation. There was only one (1%) article using an empirical BASIS FOR ANALYSIS that had no particular logic as the APPROACH TO REACH CONCLUSIONS.

A summary of this discussion of the APPROACH TO REACHING CONCLUSIONS category indicates: (1) the vast majority of articles display a logical approach in reaching

conclusions, (2) when a logical approach is used, it is usually inductive, and (3) no particular logic is more often found in positive articles.

2. Subject Matter Results

This subsection examines the subject matter content of the articles. Analysis of the number of articles assigned to various subject categories should indicate what subject matter has been emphasized in the *Journal of Supply Chain Management*.

Williams and Oumlil used tables of contents from purchasing textbooks to determine appropriate subject categories. They used 25 categories; the 25th category, “other” was further subdivided into the following four subcategories: Industrial Buyer Behavior, Marketing-related topics, Relationships between Purchasing and other functional areas, and Miscellaneous. This researcher used the same subject categories as Williams and Oumlil to maintain consistency with the earlier research effort. Table 4-1 displays the subject categories and the number of articles assigned to each category. Analysis of these categories will indicate which have been emphasized in the literature. The most common subject area was supplier selection and development. This was the subject matter of 64 of the 292 articles, which is a substantial 22 percent of the total.

Cumulatively, 75 percent of the articles were assigned to 36 percent of the subject categories. Most of the literature published in the *Journal of Supply Chain Management* is dedicated to a concentrated number of topical areas.

This researcher also conducted a frequency analysis on the results in Table 4-1. The results of this analysis indicate that nine (36%) subject categories had 0-4 articles assigned; five (20%) subject categories had five to nine articles assigned; three (12%) subject categories had 10-14 articles assigned; five (20%) subject categories had 15-19 articles assigned; and three (12%) subject categories had 20 or more articles assigned. The figures above indicate that a majority (64%) had five or more articles assigned.

TABLE 4-1: NUMBER OF ARTICLES ASSIGNED TO SUBJECT CATEGORIES

<u>Subject</u>	<u>Description</u>	<u>Articles Assigned</u>
A	Inventory Management.....	14
B	Pricing Practices and Contracts	16
C	Supplier Selection and Development.....	64
D	Personnel and Leadership.....	11
E	Purchasing Planning, Policies, and Organization.....	28
F	Strategic Purchasing Planning.....	17
G	Professionalism in Purchasing.....	4
H	Purchasing Effectiveness.....	16
I	Role of Purchasing in the Organization	18
J	Purchasing Education	6
K	Computer-Based Systems	16
L	Legal Aspects of Purchasing.....	1
M	Purchasing Transportation Services.....	2
N	Ethical Aspects of Purchasing	7
O	International Buying.....	29
P	Government Procurement	3
Q	Negotiation.....	6
R	Purchasing Research, Planning, and Budgeting	11
S	Procurement of Capital Equipment.....	3
T	Make or Buy Decisions	5
U	Receiving and Stores.....	2
V	Quality and Quality Assurance.....	6
W	Value Analysis	2
X	Disposal of Scrap, Surplus, or Obsolete Material.....	4
Y	Other	

Y1	Industrial Buyer Behavior	0
Y2	Marketing-Related Topics	1
Y3	Relationship Between Purchasing and Other Functional Areas	0
Y4	Miscellaneous	0
Total.....		292

Table 4-1 lists the number of articles assigned to each of the subject categories. These results clearly indicate the degree to which specific subjects have been emphasized in the literature. To analyze further, this researcher will define a subject as having been emphasized in the literature if it was the subject of 14 or more articles.

There were nine topical areas with 14 or more articles assigned. The subject areas are (with the number of articles assigned to each area in parentheses):

- C. Supplier Selection and Development (64)
- O. International Buying (29)
- E. Purchasing Planning, Policies, and Organization (28)
- I. Role of Purchasing in the organization (18)
- F. Strategic Purchasing Planning (17)
- B. Pricing Practices and Contracts (16)
- H. Purchasing Effectiveness (16)
- K. Computer Based Systems (16)
- A. Inventory Management (14)

This analysis also indicates 22 (8%) articles were assigned to subject categories with 0-4 articles assigned; 30 (10%) articles were assigned to subject categories with 5-9 articles assigned; 36 (12%) articles were assigned to subject categories with 10-14 articles assigned; 83 (29%) articles were assigned to subject categories with 15-19 articles assigned; and 121 (41%) articles were assigned to subject categories with 20 or more articles assigned. Figure 4-6 displays this information.

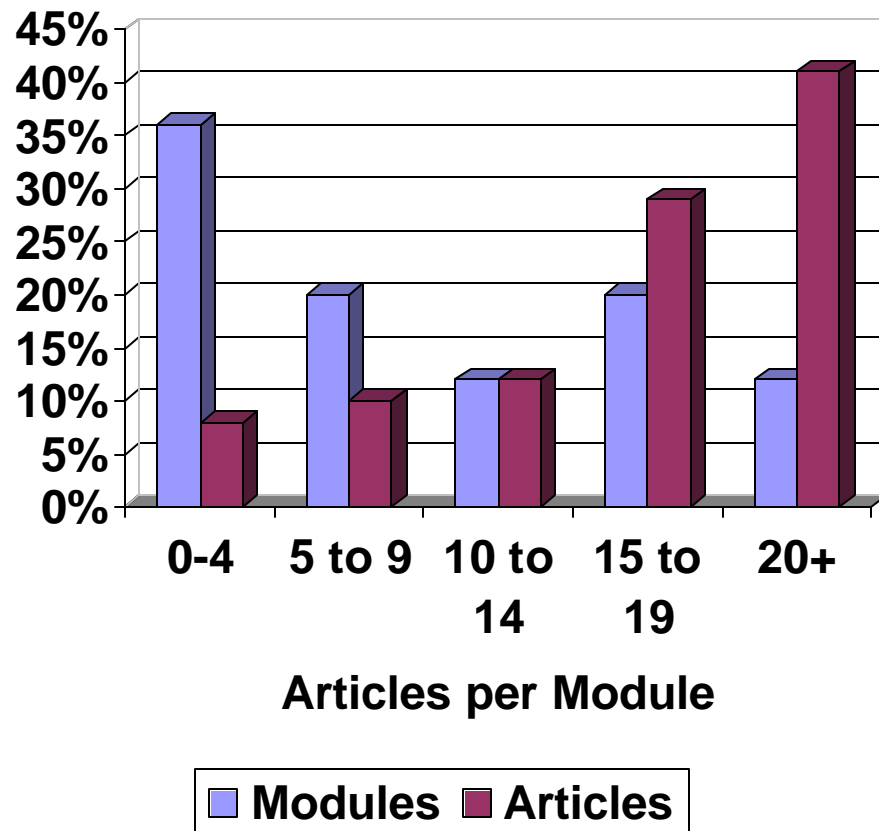
Although almost every topic area was the subject of at least one article, the figures above indicate a substantial concentration of articles in just a few subject areas. Just three (12%) of the 25 subject categories contain 41 percent of all articles; these three categories are worthy of further consideration.

The most popular subject area by a large margin is supplier selection and development, which contains a numerous 64 (22%) of the articles. Many of these articles deal specifically with partnering. Partnering involves buyers establishing close business relationships with a few supplier firms, often in an effort to get better quality or more timely delivery. Partnering involves a major cultural change from buyers who traditionally sought to have a very large number of potential suppliers in an effort to maximize price competition.

For example, in J.D.A. Galt's article "Supplier Development: A British Case Study" (Winter 1991, Volume 27, Issue 1, pp. 16-22), the author describes the major findings of a study focusing on the supplier development programs of ten organizations. Major findings indicate that the firms studied are reducing their supplier base in order to improve product and service quality, and most of the firms are urgently attempting to improve their communication channels with suppliers.

The second most common subject area is international buying, which contains 29 (10%) of the articles. Firms in the last decade have to compete more and more in a global rather than a national marketplace. Purchasing personnel are attempting to take advantage of the larger range of suppliers that a global sourcing approach offers.

Figure 4-6: Modules vs. Articles



Purchasing from foreign suppliers can present new challenges that make international buying a popular topic. For example, Robert B. Breitenbach's article "Fairness in the Resolution of Business Disputes" (1995, Volume 34, Issue 4, pp. 32-37) discusses pre-drafted

international contracts often presented by sellers from other countries, and recommends specific actions for the buyers to take to prevent losing certain legal rights.

The third dominant subject area is purchasing planning, policies and organization, which contain 28 (10%) articles. This is a broad subject area, so it is not surprising that it has a great deal of coverage. Purchasing managers have an abiding interest in what organizational design can help them be both effective and efficient. This topic has grown in importance in recent years, as many companies have begun to recognize purchasing as a key profit center rather than an ancillary activity. For example, in David J. Murphy's article "A Framework for Purchasing and Integrated Product Teams" (Summer 1996, Volume 32, Issue 3, pp. 11-19) the author suggests that multi-disciplinary teams are essential to success in a volatile business environment, but that many organizations have not been successful in implementing the team concept. He describes how to organize successful cross-functional teams and discusses the skills required of purchasing professionals for successful team performance.

The preceding analysis of the subject matter content of the articles published in the *Journal of Supply Chain Management* suggests that although the literature covers the gamut of subjects, particular areas receive much more coverage than others.

The researcher expected to find more articles on negotiation and ethical aspects of purchasing. Each of these areas was the subject of six (2%) articles. This small amount of coverage may indicate that although these are important subjects in the field of purchasing, they may not be scholarly in nature or appropriate for a professional journal. One would expect

purchasing magazines to cover negotiation and ethics more frequently than the *Journal of Supply Chain Management* does.

In summary, this analysis of the subject matter content of the literature published in the *Journal of Supply Chain Management* leads to the following conclusions: (1) the literature touches all of the subjects areas, (2) much of the literature is dedicated to a few subject areas, (3) articles concerning supplier selection and development were far more common than any other area, and (4) nine specific subject areas are emphasized in the literature.

3. Hybrid Results

This subsection examines hybrid results generated by examining both subject matter and taxonomic information other than subject matter. The results are hybrid because subject matter classification or Sweeney's Taxonomy alone could not generate them.

Figures 4-7 through 4-16 display how articles dedicated to each of the nine subject matter categories emphasized in the literature were classified using Sweeney's Taxonomy. Analysis of these results should identify how articles about the same subject matter were classified.

Each subject matter category was analyzed to determine which TYPE OF ARTICLE, NATURE OF ARTICLE, BASIS FOR ANALYSIS, and APPROACH TO REACHING CONCLUSIONS categories were used most often.

For the purpose of this analysis, only subject categories with 14 or more articles assigned will be addressed in greater detail. For subject categories with fewer than 14 articles

assigned, analysis provides less information of value. The subject area with the most articles will be discussed first.

Figure 4-7 indicates articles that focus on supplier selection and development is usually theoretical (53%) or practical (36%). Only ten percent were case histories and none were professional. Positive articles (59%) are more numerous than normative articles (41%). Positive articles tend to be empirical-inductive (68%), whereas normative articles tend to be non-empirical-deductive (63%). Many of these articles focus on supplier development rather than strictly on supplier selection. This researcher expected that the emphasis on supplier development and partnering is greater in recent years than in the past. Review of Williams and Oumlil's results indicates that this is the case. Articles focusing on supplier selection and development made up about six percent of articles published from 1965 to 1986 (Williams, 1987, p.25). From 1987 to 1998, 23 percent of the articles were in this subject area.

Figure 4-8 indicates articles that emphasize international buying are usually theoretical (89%). Positive-empirical-inductive articles numbered 15, or 56 percent of the total. Most articles are descriptive (79%). This may suggest that many are not well versed in international buying; so positive articles that describe different aspects of international sourcing help inform people about this subject. Laura M. Birou's article "International Purchasing: Benefits, Requirements, and Challenges" (1993, Volume 29, Issue 2, pp. 27-37) is representative of this type of article.

FIGURE 4-7: SUBJECT AREA C: SUPPLIER SELECTION AND DEVELOPMENT

Nature of Article	Normative (Prescriptive)						Positive (Descriptive)						
Basis for Analysis	Empirical			Non-Empirical			Empirical			Non-Empirical			
Approach to Reach Conclusions	I	D	NPL	I	D	NPL	I	D	NPL	I	D	NPL	Total
Theoretical/Conceptual	1				5	1	17			5	1	1	31
Practical/Managerial	2				10	2	6			1			21
Case History	1			2						2		1	6
Professional/Educational													
Total	4			2	15	3	23			8	1	2	58

I = Inductive reasoning D = Deductive reasoning NPL = No Particular Logic

Source: R.F. Sweeney Thesis, D.A. Smith Thesis and researcher's analysis

Figure 4-9 indicates articles discussing purchasing planning, policies and organization tend to be theoretical (73%) rather than practical (27%). The emphasis toward theoretical articles suggests that while this subject area is clearly an important one, articles on this topic may not be immediately practical to most purchasing managers. Prescriptive articles tended to be non-empirical (66%), while descriptive articles tended to be empirical and inductive (60%). An

example of this type of article is P. Fraser Johnson's "Evolving Roles and Responsibilities of Purchasing Organizations," (1998, Volume 34, Issue 1, pp. 2-11) which discussed changes in the way many firms organized their purchasing departments over a several year period.

FIGURE 4-8: SUBJECT AREA O: INTERNATIONAL BUYING

Nature of Article	Normative (Prescriptive)						Positive (Descriptive)						
Basis for Analysis	Empirical			Non-Empirical			Empirical			Non-Empirical			
Approach to Reach Conclusions	I	D	NPL	I	D	NPL	I	D	NPL	I	D	NPL	Total
Theoretical/Conceptual	2			1	4		14			1		2	24
Practical/Managerial					1		1						2
Case History										1			1
Professional/Educational													
Total	2			1	5		15			2		2	27

I = Inductive reasoning D = Deductive reasoning NPL = No Particular Logic

Source: R.F. Sweeney Thesis, D.A. Smith Thesis and researcher's analysis

Figure 4-10 indicates articles pertaining to strategic purchasing planning tend to be theoretical (75%) rather than practical (19%) or case histories (6%). Articles are almost evenly

split between positive (56%) and normative (44%), and evenly split between empirical and non-empirical. Several of these articles concentrated on fairly new concerns such as integrating environmental awareness or product life-cycle consideration into purchasing strategies. G.M. Naidu's article "Purchasing's Preparedness for ISO 9000 International Quality Standards" (1996, Volume 32, Issue 4, pp. 46-53) is representative of this type of article.

FIGURE 4-9: SUBJECT AREA E: PURCHASING PLANNING, POLICIES, AND ORGANIZATION

Nature of Article	Normative (Prescriptive)						Positive (Descriptive)						
Basis for Analysis	Empirical			Non-Empirical			Empirical			Non-Empirical			
Approach to Reach Conclusions	I	D	NPL	I	D	NPL	I	D	NPL	I	D	NPL	Total
Theoretical/Conceptual	1			2			10		1	3	1	1	19
Practical/Managerial	1				1	1	2			2			7
Case History													
Professional/Educational													
Total	2			2	1	1	12		1	5	1	1	26

I = Inductive reasoning D = Deductive reasoning NPL = No Particular Logic

Source: R.F. Sweeney Thesis, D.A. Smith Thesis and researcher's analysis

FIGURE 4-10: SUBJECT AREA F: STRATEGIC PURCHASING PLANNING

Nature of Article	Normative (Prescriptive)						Positive (Descriptive)						
Basis for Analysis	Empirical			Non-Empirical			Empirical			Non-Empirical			
Approach to Reach Conclusions	I	D	NPL	I	D	NPL	I	D	NPL	I	D	NPL	Total
Theoretical/Conceptual	1			1	3		4			3			12
Practical/Managerial	2						1						3
Case History										1			1
Professional/Educational													
Total	3			1	3		5			4			16

I = Inductive reasoning D = Deductive reasoning NPL = No Particular Logic

Source: R.F. Sweeney Thesis, D.A. Smith Thesis and researcher's analysis

Figure 4-11 indicates articles focusing on pricing practices and contracts are predominantly practical (87%) rather than theoretical (13%). Ten (66%) articles are normative-non-empirical-deductive. Almost all of the articles are non-empirical (93%), perhaps because many firms may be reluctant to share pricing information, even anonymously, with a researcher.

Articles in this category deal with topics such as discount pricing strategy, total cost of ownership, activity based costing, and using economic data to monitor price increases.

Figure 4-12 indicates most articles that discuss the role of purchasing in the organization are theoretical (73%). This topic is probably not one that lower level purchasing managers focus on; the subject itself is generally of greater interest to more senior level purchasing managers. Larry Smeltzer's article "Sources of Purchasing Managers' Influence Within the Organization" (1995, Volume 31, Issue 4, pp. 2-11) is representative of this type of article.

FIGURE 4-11: SUBJECT AREA B: PRICING PRACTICES AND CONTRACTS

Nature of Article	Normative (Prescriptive)						Positive (Descriptive)						
Basis for Analysis	Empirical			Non-Empirical			Empirical			Non-Empirical			
Approach to Reach Conclusions	I	D	NPL	I	D	NPL	I	D	NPL	I	D	NPL	Total
Theoretical/Conceptual					1		1						2
Practical/Managerial				2	9						1	1	13
Case History													
Professional/Educational													
Total				2	10		1				1	1	15

I = Inductive reasoning D = Deductive reasoning NPL = No Particular Logic

Source: R.F. Sweeney Thesis, D.A. Smith Thesis and researcher's analysis

FIGURE 4-12: SUBJECT AREA I: ROLE OF PURCHASING IN THE ORGANIZATION

Nature of Article	Normative (Prescriptive)						Positive (Descriptive)						
Basis for Analysis	Empirical			Non-Empirical			Empirical			Non-Empirical			
Approach to Reach Conclusions	I	D	NPL	I	D	NPL	I	D	NPL	I	D	NPL	Total
Theoretical/Conceptual	1			2	1		4			2	1		11
Practical/Managerial					1		1				1		3
Case History	1												1
Professional/Educational													
Total	2			2	2		5			2	2		15

I = Inductive reasoning D = Deductive reasoning NPL = No Particular Logic

Source: R.F. Sweeney Thesis, D.A. Smith Thesis and researcher's analysis

Figure 4-13 indicates articles emphasizing computer-based systems for purchasing are mostly practical (67%) rather than theoretical (27%) or case history (7%). Articles are nearly split between normative and positive. Descriptive articles are equally divided between empirical and non-empirical. Prescriptive articles tend to be non-empirical (71%) and deductive (86%). Several of these practical articles address electronic data interchange between buyers and suppliers. A recent article of particular interest in this subject area is by Li-Pheng Khoo, entitled

“The Potential of Intelligent Software Agents in the World Wide Web in Automated Part Procurement”

(1998, Volume 34, Issue 1, pp. 46-52).

FIGURE 4-13: SUBJECT AREA K: COMPUTER BASED SYSTEMS FOR PURCHASING

Nature of Article	Normative (Prescriptive)						Positive (Descriptive)						
Basis for Analysis	Empirical			Non-Empirical			Empirical			Non-Empirical			
Approach to Reach Conclusions	I	D	NPL	I	D	NPL	I	D	NPL	I	D	NPL	Total
Theoretical/Conceptual					1		1			1	1		4
Practical/Managerial	1				4		3			1		1	10
Case History				1									1
Professional/Educational													
Total	1			1	5		4			2	1	1	15

I = Inductive reasoning D = Deductive reasoning NPL = No Particular Logic

Source: R.F. Sweeney Thesis, D.A. Smith Thesis and researcher's analysis

Figure 4- 14 indicates articles on inventory management tend to be theoretical (50%) rather than practical (29%) or case history (21%). While the theoretical articles are roughly split between normative and positive, the practical articles are all normative, non-empirical and

deductive. Authors writing practical articles on inventory management recommend specific approaches and techniques. Some of these articles address fairly new topics such as just-in-time inventory approaches; others deal with age-old challenges like maintaining inventory system accuracy.

FIGURE 4-14: SUBJECT AREA A: INVENTORY MANAGEMENT

Nature of Article	Normative (Prescriptive)						Positive (Descriptive)						
Basis for Analysis	Empirical			Non-Empirical			Empirical			Non-Empirical			
Approach to Reach Conclusions	I	D	NPL	I	D	NPL	I	D	NPL	I	D	NPL	Total
Theoretical/Conceptual	1			1	2		2					1	7
Practical/Managerial					4								4
Case History							1			1		1	3
Professional/Educational													
Total	1			1	6		3			1		2	14

I = Inductive reasoning D = Deductive reasoning NPL = No Particular Logic

Source: R.F. Sweeney Thesis, D.A. Smith Thesis and researcher's analysis

Figure 4-15 indicates articles concentrating on purchasing effectiveness are mostly theoretical (50%) or practical (43%) rather than case history (7%). All of the articles are

inductive, and empirical-inductive articles (79%) are the majority. All of the authors reasoned from specific situations to make general conclusions about purchasing effectiveness, and most used empirical evidence. Most of these articles focus on the purchasing department serving its internal customers effectively. Linda L. Stanley's article "Internal Service Quality in Purchasing: An Empirical Study" (1998, Volume 34, Issue 3, pp. 50-60) is representative of this category.

FIGURE 4-15: SUBJECT AREA H: PURCHASING EFFECTIVENESS

Nature of Article	Normative (Prescriptive)						Positive (Descriptive)						
Basis for Analysis	Empirical			Non-Empirical			Empirical			Non-Empirical			
Approach to Reach Conclusions	I	D	NPL	I	D	NPL	I	D	NPL	I	D	NPL	Total
Theoretical/Conceptual	1			1			4			1			7
Practical/Managerial	4						1			1			6
Case History							1						1
Professional/Educational													
Total	5			1			6			2			14

I = Inductive reasoning D = Deductive reasoning NPL = No Particular Logic

Source: R.F. Sweeney Thesis, D.A. Smith Thesis and researcher's analysis

Figure 4-16 indicates articles on personnel and leadership tend to be practical (60%) rather than theoretical (40%). Prescriptive articles (60%) outnumbered descriptive (40%). Some of the recent articles in this category focus on effective teams, and cross-functional sourcing teams in particular.

FIGURE 4-16: SUBJECT AREA D: PERSONNEL AND LEADERSHIP

Nature of Article	Normative (Prescriptive)						Positive (Descriptive)						
Basis for Analysis	Empirical			Non-Empirical			Empirical			Non-Empirical			
Approach to Reach Conclusions	I	D	NPL	I	D	NPL	I	D	NPL	I	D	NPL	Total
Theoretical/Conceptual	2						2						4
Practical/Managerial	1				1	2	1					1	6
Case History													
Professional/Educational													
Total	3				1	2	3					1	10

I = Inductive reasoning D = Deductive reasoning NPL = No Particular Logic

Source: R.F. Sweeney Thesis, D.A. Smith Thesis and researcher's analysis

This analysis of the subject matter categories emphasized in the *Journal of Supply Chain Management* indicates most of the articles in most of the subject areas tend to be theoretical, normative, non-empirical, and either inductive or deductive. This is not surprising, since earlier analysis led to the conclusion that most of the literature was theoretical, normative, non-empirical, and based on inductive or deductive logic. This analysis has shown that some of the subject areas have their own classification tendencies.

D. SUMMARY

This chapter provided a summary analysis of the results of applying Sweeney's Expanded Taxonomy to articles published in the *Journal of Supply Chain Management* from 1987 to 1999.

This analysis was presented in three parts. The first part analyzed the taxonomical results generated by the categories in Sweeney's Taxonomy. The second part analyzed the results of classifying the literature by subject matter. The final part analyzed hybrid results generated by considering both subject matter and the other taxonomical categories. This analysis led to conclusions about the literature.

V. CONCLUSIONS AND RECOMMENDATIONS

A. INTRODUCTION

This chapter will present conclusions and recommendations from the research, answer the primary and subsidiary research questions, and suggest areas for further research.

B. CONCLUSIONS

Several conclusions can be drawn from the research conducted in this study. First, both journals have a significant concentration of articles in relatively few subject areas. Most of the literature published in the *National Contract Management Journal* is dedicated to a small part of the body of knowledge. 75 percent of the articles were assigned to only 26 percent of the subject categories. For the *Journal of Supply Chain Management* the concentration was not quite as pronounced: 75 percent of the articles were assigned to 36 percent of the subject categories.

Second, both journals had a lot of theoretical type articles. 41 percent of the articles in the *National Contract Management Journal* were theoretical and 51 percent of the articles in the *Journal of Supply Chain Management* were theoretical. There are periodicals that probably have a more practical focus than these journals. *Contract Management* is a monthly magazine targeted toward the industry and Government personnel involved in Government contracting. It is published by the National Contract Management Association, which also publishes the

National Contract Management Journal. *Purchasing* is a bi-weekly magazine targeted toward commercial buyers. The vast majority of authors of articles in the *Journal of Supply Chain Management* are academicians, who may tend to write theoretical articles more often than others.

Third, the *Journal of Supply Chain Management* had more articles with empirical support (53%) than the *National Contract Management Journal* (43%). The National Association of Purchasing Managers, which publishes the *Journal of Supply Chain Management*, appeared to have sponsored a lot of research that was later relied upon in articles in the *Journal of Supply Chain Management*. Usually these grants were to academicians, who could be expected to use an empirical approach more often than non-academicians.

C. RECOMMENDATIONS

Continuity in publishing has been a challenge for the *National Contract Management Journal*. The *National Contract Management Journal* is no longer published as a separate periodical. Instead, journal quality articles now appear periodically in *Contract Management*, a monthly magazine published by the same organization. If the National Contract Management Association is interested in reviving the *National Contract Management Journal* as a viable publication, the first recommendation is that they formally establish ties with academic institutions that emphasizes contracting. There are strong organizational ties between the publisher of the *Journal of Supply Chain Management* and Arizona State University. Many articles in the *Journal of Supply Chain Management* mentioned the support of grants. These grants allow a

researcher to take more time to produce an article, and would more easily allow an empirical approach to be used.

A second recommendation is that the *National Contract Management Journal* should consider aggressively recruiting more academics to their editorial board. The *Journal of Supply Chain Management* lists 41 people as article reviewers, all of who are associated with a college or educational institution. The editor and eight of the 13 editors also work in academia; the remaining five work for private companies. Of the *National Contract Management Journal's* editorial board, only three of 14 members are clearly affiliated with an academic institution.

A third recommendation is that professionals in the Government contracting community should be encouraged to submit articles for publication. Sharing lessons learned and advocating new approaches in the form of disciplined, well thought out journal articles could help achieve the “revolution in business affairs”.

A fourth recommendation is that the National Contract Management Journal select or solicit articles based on sponsor demand or using the External Acquisition Research Program database. This might lead to topics that are more of interest to both potential article writers and readers.

D. RESEARCH QUESTIONS

This section renders answers to the research questions posed in Chapter I. The primary research question this thesis sought to answer was:

- **What would be the results of classifying the literature presented in the *National Contract Management Journal* from Volume 24, Issue 1 (1991) through Volume 29, Issue 2 (1999) and the literature presented in the *Journal of Supply Chain Management* from Volume 23, Issue 1 (1987) through Volume 36, Issue 1 (2000), and what patterns and trends in the literature could be discovered in an analysis of the results?**

Each one of the 65 articles published in the *National Contract Management Journal* from 1990 through 1999 were assigned to one of 36 taxonomical categories and one of 69 subject matter categories. Ultimately this resulted in each article being assigned to one of 2,484 categories. Analysis of the results, presented in Chapter III identified specific patterns in the literature.

Each one of the 292 articles published in the *Journal of Supply Chain Management* from 1987 through early 2000 were assigned to one of 36 taxonomical categories and one of 25 subject matter categories. Ultimately this resulted in each article being assigned to one of 900 categories. Analysis of the results, presented in Chapter IV identified specific patterns in the literature.

Subsidiary research questions included:

- **To what extent does a statistical analysis of the results of the classification of this literature provide information on where most contracting and purchasing literature has focused?**

The results of this analysis, presented in Chapters III and IV, precisely identified the focus of the literature. Subject matter analysis of the *National Contract Management Journal* indicated the majority of articles fall into the broad grouping of contracts and procurement, rather than basic tools and functions or special topics and considerations. There

were a roughly equal number of articles on the contract pre-award phase as there was on post-award. This was surprising given that many people believe that pre-award receives a disproportionate share of attention. At the individual topic level, nearly 11 percent of the articles were written about Claims, Disputes and Appeals, and eight percent of the articles were written about the procurement process. This was nearly twice as many articles as the next most popular topics: contract types, general contract provisions, and considerations in research and development contracting. Only 18 of the 69 subject areas were emphasized in the *National Contract Management Journal*. Some of this is due to the fact that their rate of publishing articles has slowed dramatically over the last 30 years. In the 1970s over 20 articles per year were published; in the 1990s the average number was 7.2 articles per year.

Subject matter analysis of the *Journal of Supply Chain Management* indicated that although all 25-topic areas were the subject of at least one article, there was a substantial concentration of articles on just a few subject areas. Just three of the 25 subject areas (12%) contain 41 percent of the articles. The most popular topic by a large margin was supplier selection and development; 22 percent of all the articles were on this topic. International buying and purchasing planning, policies and organization were the next most popular topics.

- **What will a comparative analysis of the results of classification of this literature suggest about similarities and differences of contracting and purchasing literature?**

The 65 *National Contract Management Journal* articles fell into 22 taxonomical categories. Statistical analysis indicated a majority of the articles were classified were practical, normative, non-empirical, and used an inductive logical approach. Practical articles were

emphasized in the literature, and the number of professional/education related articles is quite low. A majority of the articles are prescriptive rather than descriptive, and when an article is practical, it usually recommends change or a particular approach; it is normative. Empirical evidence was used in less than half of the articles. Most articles displayed a logical approach to reaching conclusions, usually an inductive approach. Articles that displayed no particular logical approach are usually positive (descriptive).

The 292 *Journal of Supply Chain Management* articles fell into 26 taxonomical categories. Statistical analysis indicated a majority of the articles were classified as theoretical, positive, empirical, and inductive. Theoretical articles were emphasized in the literature. The number of case histories is low and the number of professional/educational articles is very low. The majority of the articles were descriptive rather than prescriptive. The theoretical articles tended to be descriptive and the practical articles tended to be prescriptive. Over half the articles used empirical evidence. The vast majority of articles used an inductive approach to reaching conclusions.

Comparing the journals, the *National Contract Management Journal* articles tended to be more practical, normative, and non-empirical than the articles in the *Journal of Supply Chain Management*. This supports the impression many have that the *National Contract Management Journal* is a practitioners' journal.

Neither journal had many professional/educational articles. Those article probably are more frequent in non-journal periodicals like *Contract Management* and *Purchasing*.

- **What will the analysis of the results of the classification of this literature suggest about similarities and differences in the contracting and purchasing bodies of knowledge?**

There is a significant amount of subject matter overlap between Government contracting and commercial purchasing. At the broadest level there is the most amount of overlap. Within subject areas there are differences in focus. However, almost all the purchasing subject areas have contracting equivalent areas. Both journals had numerous articles regarding supplier selection, international, planning/strategic planning, pricing, effectiveness, and computer-based systems to aid in purchasing. They both had fewer articles, but both still covered, professional education, ethical aspects, and legal aspects of contracting and purchasing.

There are some subject areas that are more Government contracting related. These include Cost Accounting Standards, procuring Research and Development, and a stronger emphasis in service contracting.

There are some subject areas that commercial purchasing focuses on more than the Government contracting community does. These include inventory management, which was covered much more frequently in the *Journal of Supply Chain Management* than in the *National Contract Management Journal*. On the Government contracting side, inventory management and requirements definition is often considered its own field, rather than being considered part of contracting itself. International Buying was another topic that was covered a lot more in the *Journal of Supply Chain Management*.

- **What would be the results of compiling an annotated bibliography of the literature presented in the *National Contracting Management Journal* from 1990 through 1999?**

Appendix A contains an annotated bibliography of all the articles published in the *National Contract Management Journal* from 1991 to 1999. In addition to presenting a summary of each article, the bibliography also displays how each article was classified after applying Sweeney's Expanded Taxonomy.

The bibliography can be used as a reference in the conduct of contracting and purchasing research. Additionally, the classification results presented in the bibliography can be merged together with results of future contracting literature classification efforts.

E. RECOMMENDATIONS FOR FURTHER RESEARCH

Application of the expanded taxonomy to ten years of *National Contract Management Journal* articles and 13 years of *Journal of Supply Chain Management* articles provided useful information about focal points and trends in the literature. Based on this information, the researcher induced conclusions about the entire body of contracting and purchasing literature, and made inferences about the contracting and purchasing fields.

However, the *National Contract Management Journal* and the *Journal of Supply Chain Management* are only two sources of contracting and purchasing literature. Subject matter analysis of other periodicals such as *Contract Management* and *Purchasing* would yield more information about the degree of overlap between Government contracting and

commercial purchasing. This would contribute to a greater understanding of the contracting and purchasing fields.

An additional area for research would be to pick a finite number of articles and analyze the degree of academic and research vigor used. This would be a more finely tuned analysis of the degree of empiricism of particular articles or periodicals.

Another research item of interest would be to identify academic institution that address government acquisition and ones that address acquisition and purchasing in general. This alone would not be a major undertaking, but may uncover additional periodicals that address acquisition issues.

F. SUMMARY

This chapter presented conclusions and recommendations based on analysis of the classification results. It also provided answers to the primary and subsidiary research questions. Finally, this chapter provided recommendations for further research.

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APPENDIX A

This appendix provides synopsis of the articles published in the National Contract Management Journal from Volume 24, Issue 1 (1991) through Volume 29, Issue 2 (1999). At the end of each synopsis is the corresponding category label. The corresponding National Contract Management Association Body of Knowledge module is bracketed ([]).

Volume 24, Issue 1, 1991

“Reconciling Procurement and Inventory Management Objectives in Department of Defense Spares Acquisition,” Dr. James H. Perry, pp. 1-6.

This article examines the acquisition and inventory management process used to determine “economic order quantity” requirements and evaluates the effectiveness of current DOD economic order quantity (EOQ) techniques. DOD uses a continuous review/reorder point system to manage wholesale and retail spares and repair parts.

The author suggests that some of the underlying assumptions for using the EOQ model do not hold true. He examined demand history for 800 items stocked at eleven Department of Defense Inventory Control Points at the start and end of a 15-month period ending in July of 1987.

One of the assumptions of the DOD system is that order cost and holding cost parameters used to determine the EOQs are accurate and consistent. Perry suggests that order costs may be understated by not incorporating true administrative lead-time impacts. For the items he reviewed, procurement workload went down by 20 percent, but the administrative lead-times increased by 30 percent, even with relatively constant staffing.

A second assumption is that the price paid is not a function of the quantity ordered. In roughly 15 percent of the items reviewed, quantity order discounts were available, reducing unit prices by 10 to 20 percent. The final assumption is that demand is reasonably accurate and “steady-state” over the period. For many of the items reviewed, demand was not steady, it varied dramatically.

He proposes the notion of using a “dynamic buy quantity”. This quantity would include using EOQ methods only for generating a target order-quantity for solicitation purposes. This EOQ approach should be designed to recognize the economic trade-offs between ordering cost and holding cost. Government buyers should routinely solicit quantity ranges, to recognize and take advantage of quantity price discounts.

The actual buy quantity would be dynamic and could be determined by the input of price-quantity options into a structured evaluation process. Total cost to the Government would include not only the actual material costs associated with each option, but would also consider transportation, inventory investment, and relevant administrative costs in making a recommendation.

“Putting CAS Into Perspective,” Darrel A Sourwine, pp. 7-14.

The article notes that Cost Accounting Standards (CAS), put out by the Cost Accounting Standards Board (CASB) are often very different from the Generally Accepted Accounting Principles (GAAP) that the Federal Accounting Standards Board (FASB) promulgates. CAS and GAAP have different purposes, so it is not surprising that they treat issues differently. CAS focuses on product and contract costing. This article discusses CASB’s innovation in four areas: the allocation of period costs, the recognition of imputed costs, the narrowing of accounting alternatives (allowed under GAAP), and the timing of the recognition of a cost (accrual versus cash accounting).

GAAP allows a lot of flexibility in assigning period costs such as General and Administrative (G&A) costs to the product. CAS defines more specifically how to do it, to make product costs more consistent. Financial accounting has two drawbacks that are carried over to cost accounting: allocating historical costs and ignoring self-insurance costs. These approaches are fine for financial accounting due to the conservative nature of financial accounting. In cost accounting, using an imputed cost such as rental cost or replacement cost rather than historical cost is more appropriate. CASB also recognizes self-insurance as an imputed cost.

The new Cost Accounting Standards Board has new issues to deal with, including policies on how to account for pensions, and mergers and acquisitions.

THEORETICAL, POSITIVE, NON-EMPIRICAL, DEDUCTIVE

[6]

“Access to Contractors’ Records - The Early Days,” James F. Nagle, pp. 15-22.

This article is a historical accounting of how the Government’s ability to audit contractors has grown dramatically over the last 100 years, and especially in the last 20 years. Before the 1890s, the Government did not have the ability to effectively audit contractors.

During World War I and II, defense spending grew tremendously. With it, Congressional and administration concern grew to verify whether the Government was getting a fair deal from its contractors. The Air Corps Act of 1926 applied audit provisions just to aircraft manufacturers. Later, in the Vinson-Trammell Naval Parity Act of 1934, the audit provisions were extended to ships, and covered sub-contractors as well as prime contractors.

Title XIII of the Second War Powers Act of 1942 expanded audit provisions. After the war, Congress grew accustomed to exerting more control over contractors than ever before, so audit provisions became a common part of procurement legislation, including the Armed Services Procurement Act of 1947 and the Armed Services Procurement Regulations and the Federal Acquisition Regulations.

THEORETICAL, POSITIVE, NON-EMPIRICAL, NO PARTICULAR LOGIC

[47]

“Defense Contractors - The Next Spotted Owl?” Douglas P. Beighle, pp. 23-30.

In this article, the author, a Vice-president at Boeing, gives a defense industry perspective on current procurement issues.

He attributes the poor earning of defense companies as due in large part to DOD’s insistence in recent years on inappropriate contract types. He notes with concern the increasing trend to criminalize the procurement process. As Congress became frustrated over certain procurement decisions or overcharges, they responded by establishing more and more laws forbidding particular actions. This has caused both Government and industry contracting workers to have to worry excessively about potential criminal prosecution. It stifles good decision-making as people shy away from decisions that have any risk of being second-guessed for later. This does not serve the public well.

Additionally, the Defense Contract Audit Agency has adopted the attitude of “look for and expect fraud”. This has broken down the working relationships and goodwill that help foster the spirit of teamwork and cooperation among Government and industry.

To reduce the risk of criminal charges, Boeing has introduced employee self-governance, which has including extensive training to employees. He recommends the Boeing approach to other companies.

THEORETICAL, NORMATIVE, NON-EMPIRICAL, NO PARTICULAR LOGIC [24]

“Dual Source Procurement,” Military Reform Caucus, pp. 31-46.

This article is an edited transcript of a panel discussion sponsored by the Military Reform Caucus, a group of members Congress interested in military reform. The panel discussion focused on the general topic of dual source procurement and specifically, whether the Department of Defense should seek cost and pricing data in a dual source competition. Panelists included senior representatives from the General Accounting Office, the Department of Defense Inspector General and Navy contracting communities. Dual source contracting is a procurement technique in which the total Government requirement is split between two contractors, with the larger share normally going to the low bidder and the smaller share to the high bidder.

The GAO maintains that the services basically have taken it too much on faith that dual sourcing represents true competition. If they are dual sourcing, the services feel that should not need to require cost or pricing data from contractors, or evaluate cost or pricing data to get a fair price for the Government.

The GAO and DOD IG representatives want to continue asking for and evaluating cost or pricing data. The Navy representative suggests that requiring cost or pricing data sends a mixed signal to the offeror, and ends up undermining the price competition. Additionally, requiring and evaluating cost or pricing data costs money and time, and is often not worth the added expense. The GAO and DOD IG representatives disagree

THEORETICAL, POSITIVE, NON-EMPIRICAL, NO PARTICULAR LOGIC [38]
“Ready! Fire! Aim! The DOD 5 Percent Minority Purchase Goal: Reflections on a Misdirected Program,” Robert W. Menestrina, pp. 47-56.

This article examines the Government’s minority purchasing program and offers some recommendations for improvement. It discusses the 5 percent minority purchase goal within the Department of Defense. The federal Government has created programs to increase purchases from small minority businesses. These programs are not working. Statistics suggest that the percent of minority contracting participation has dropped since 1978 when the Congress first required subcontracting plans.

Established minority vendors do not exist in adequate numbers needed to increase market share. The 5 percent minority purchase goal is unrealistic.

Several suggestions for improvement are offered. Delete the 5 percent goal; we need to measure and recognize outreach and partnership efforts, not just dollars awarded. Improve minority business data collection and reporting; fund the bureau of the Census to get reports annually instead of every five years. Accept the limitations of purchasing as a development tool; using purchasing to encourage new start up companies does not work. Allow buyers to make partnerships with small minority firms; empower buyers to create partnerships. Drop Small Disadvantaged Business set-asides; allowable exemptions have trivialized the DOD minority set-aside program. Drop the U.S. manufacturer bias of the current minority program; broaden it to include non-manufacturing small minority firms.

THEORETICAL, NORMATIVE, EMPIRICAL, INDUCTIVE [58]

“A Comment on Using the Capital Asset Pricing Model to Determine Whether Defense Profits are Excessive,” Donna J.S. Peterson and Dr. Ronald L. Straight, pp. 57-61.

This article is an alternative interpretation of study results from an earlier article. The earlier article was “Are Defense Industry Profits Excessive? A Capital Market Perspective,” (*National Contract Management Journal*, Winter, 1989) by Maj. Jeffery A. Sorenson. Sorenson suggests an innovative approach to determining whether defense industry profitability is too high. He correctly notes that one problem with accounting measures of profitability is that they do not measure the riskiness of the income stream. More importantly, he notes that “excessive” is a relative term and few people agree on the point at which defense profits become excessive.

Sorenson uses the Capital Asset Pricing Model (CAPM) to compare the risk-reward relationship for defense firms with that of the market as a whole and concludes that defense firms are more risky than average and have not generally provided investors profits adequate to compensate for that added risk.

The authors of this article took Sorenson’s data from 1981-1986, and ran more mathematical tests. From it they conclude that defense company returns are not excessive and

are commensurate with the risk as defined by market measures. The group of all defense firms combined is significantly less risky than the non-defense companies.

Their results confirm Sorenson's contention that a market measure of return is the most appropriate one. These results also indicate that the risk-return relationship is the same for defense and non-defense companies. Contrary to Sorenson's results, they suggest that defense companies are either no different or less risky than firms doing strictly commercial work.

THEORETICAL, POSITIVE, EMPIRICAL, INDUCTIVE [2]

Volume 24, Issue 2, 1991

“Remarks – 1991 Acquisition Research Symposium,” John D. Rittenhouse, pp. 7-14.

This article gives a perspective on the current state of major weapons system acquisition from the industry side. Problems with the acquisition system are summarized into three areas. He notes that the acquisition system takes too long, it costs too much, and it has become too risk averse.

Suggestions for improvement are then offered. We need to re-educate the Government/industry team on the concept of win/win relationships, and on how to manage cost-plus contracts. We need to apply cross-functional teams to help “de-litigate” the relationship between the Government and the contractor. The contractor performance appraisal should be used as a model for rewarding consistent performers.

THEORETICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE [24]

“Creating a Professional Acquisition Work Force,” Rep. Nicholas Mavroules, pp. 15-24.

In this article, a Congressman on the Armed Services Committee explains the thinking behind the Defense Acquisition Workforce Improvement Act (DAWIA), and highlights some of its provisions.

Some of the procurement scandals of the 1980s are mentioned, and the idea that with each new scandal, the public loses more confidence in the Pentagon and becomes more convinced that the military is acting irresponsibly with the taxpayers' money. Congress typically responds to each new scandal by enacting new laws, the Pentagon issues more regulations, and the bureaucracy levies a new set of record-keeping requirements on contractors, making the process more and more cumbersome.

Congress in the past has focused on the process and the structure of the acquisition system. He suggests that it is time to pay more attention to the people in the acquisition field. We need to train them better. We need to pay more attention to their career paths. We need to prepare them as professionals, and to reward them the important and critical functions they perform.

DAWIA mandated the creation of a professional acquisition work force and corps within each of the military services and the defense agencies. The legislation addressed three

areas: personnel qualifications such as experience, education and training, and tenure requirements; the appropriate mix of civilian and military personnel; and, mobility requirements and budget considerations. Tenure requirements will add to program stability and continuity; there is too much turnover at the top.

PROFESSIONAL, POSITIVE, NON-EMPIRICAL, INDUCTIVE

[26]

“Integrating Quality Consideration in the Systems Acquisition Process,” Dr. James H. Perry, pp. 25-32.

This article examines the use of quality information in systems acquisition decisions by incorporating specific quality factors in a simple analytical model designed to provide the buyer with the capability to appropriately consider quality differences in reaching a cost-effective acquisition decision. First, dimensions of quality are discussed. The article then reports the results of an extensive survey of National Association of Purchasing Management (NAPM) professionals in which the general feasibility and desirability of explicit consideration of quality factors in the systems acquisition process are firmly established.

The article introduces and illustrates an analytical approach to quality factors and their cost implications. Based on the results, it is determined that quality is an important factor in many systems acquisition decisions, and that generally accepted dimensions of quality can be identified and applied in an operational mode to assist the buyer in making the most desirable acquisition decision.

PRACTICAL, NORMATIVE, EMPIRICAL, DEDUCTIVE

[55]

“Policy Guidance on Market Research for Contracting Officers, John J. Mulhern, pp. 33-40.

This article discusses the market research requirements of the Competition in Contracting Act (CICA) and the associated regulatory guidance, including the Federal Acquisition Regulation (FAR) and the *Armed Services Pricing Manual (ASPM)*. References in CICA and FAR are quoted and commented on. The FAR offers guidance on the kinds of information that ought to be obtained through market research and analysis. The *ASPM* contains a table that lists 15 market research techniques and states their applicability to different kinds of buying situations. Contracting officers need to conduct market research using these references. More and better market research will help improve the contracting process.

PRACTICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE

[29]

“Managing Software Development: An Insight into the Process,” Lt. Col. Jerome S. Gabig, pp. 41-50.

This article discusses large software development projects, and gives a recommended approach to manage their acquisition. DOD spent approximately \$20 billion in 1990 developing new software. Furthermore, DOD annually spends in excess of \$20 billion trying to maintain its existing software. Typically, major software development efforts are plagued with sizable cost overruns and extensive delays. The article details the “waterfall model” of software development.

The eight phases of the waterfall model are examined individually. The phases are: system requirements, system design, software requirements analysis, preliminary program design, detailed program design, coding, subsystem testing, and system testing. If any phase is

done improperly, the successive phases are apt to fail. The key to effective software acquisition is to follow the model and carefully manage each phase.

THEORETICAL, NORMATIVE, NON-EMPIRICAL, DEDUCTIVE

[69]

“Multiple Award Schedule Contracting: Improvement Initiatives, Cases, Protests, and Regulatory Changes/Proposals,” Robert S. Brams and Michael W. Reardon, pp. 51-68.

This article discusses the GSA’s Schedule Improvement Project, the efforts of industry and the American Bar Association to address the problems associated with multiple award schedule contracting, and the various cases, protest decisions, regulatory changes, and proposals involving multiple award schedule (MAS) contracting.

The regulations governing MAS contracting need to be revised. It appears that the GSA, industry and ABA initiatives may lead to some reform. Industry is focused on encouraging changes that will expedite contract award, reduce pre-award disclosure requirements and price reduction exposure, and result in contract pricing more consistent with the commercial marketplace. The Government, on the other hand, remains focused on ensuring that it receives prices at least as low as those offered to “most favored customers”.

THEORETICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE

[33]

“Certifying Claims under the Contract Disputes Act: A Look at What’s Required after *Grumman v. United States*,” David M. Nadler and Sheila C Stark, pp. 69-78.

The question of who may certify claims for the contractor before submitting the claim to the Government has been answered by the United States Court of Federal Appeals for the Federal Circuit in *United States v. Grumman Aerospace Corp. (Grumman)*. In *Grumman*, the court literally interpreted the “senior company official in charge at the contractor’s plant or location involved” standard to require that the official must have both primary responsibility for the execution (performance) of the contract and a physical presence at the location of the primary contract activity. This strict construction of the certification requirement stands as the latest in a series of Government tools used to make the contractor claims process more difficult for contractors. This shows that the Government appears to have lost sight of the basic goals of the Contract Disputes Act certification requirement- to protect the taxpayer from fraudulent or inflated claims and to promote the settlement of disputes.

Until *Grumman* is reversed or corrective legislation is passed, contractors must comply with it. This article details the *Grumman* decision, and provides advice to contractors and certifying officials regarding how best to meet the CDA certification requirements.

PRACTICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE

[40]

“Key Aspects of the DOD’s MMAS Final Rule,” Capt. Gregory A. Garrett, USAF, CPCM, pp. 79-88.

This article discusses the present and potential impact on Government and industry of the contractor Material Management and Accounting System (MMAS) Final Rule. The Rule was enacted in 1989, in response to Congress' call for the secretary of defense to prescribe standards for contractor inventory accounting systems. The article gives the background of events that led up to the development of the contractor MMAS development, details on the MMAS Final Rule itself, and the three key aspects of contractor MMAS: implementation, disclosure/demonstration, and potential certification.

In the middle and late 1980s, Defense Contract Audit Agency (DCAA) contractor audits noted that defense contractor deficiencies in their Material Requirements Planning and Manufacturing Resources Planning systems included a range of problems. Some examples were billing materials far in advance of production need dates, inconsistent costing of purchases, improper material transfers, and double billing of material. In response to the DCAA findings and growing congressional concern, DOD developed the Ten Key Elements of MMAS systems, and enforcement requirements for the administrative contracting officer to follow.

With industry input, DOD established the MMAS Final Rule. A key part of the Final Rule is the Ten Key Elements, or MMAS standards. The Ten Key Elements are basically self-explanatory statements about the characteristics that any effective material management system should possess. If defense contractors develop and implement inventory accounting systems that adhere to these MMAS standards, they will be more effective in their acquisition, use, and disposition of material, thus saving themselves and the Government billions of dollars.

MMAS regulations apply to big business contractors that receive DOD prime or sub-contracts totaling \$50 million or more in a fiscal year. Industry has had a hard time meeting the MMAS objectives. The author suggests that MMAS should apply to production contracts only, not to research and development or operations and maintenance contracts, and notes that MMAS is a complex and controversial subject.

The Ten Key Elements of MMAS are included as an appendix to the article.

THEORETICAL, NORMATIVE, NON-EMPIRICAL, DEDUCTIVE

[16]

“The Byrd Amendment and the Government Contractor: Death of a Salesman?” Paul J. Seidman and Robert D. Banfield, pp. 89-94.

This article gives the background of the Anti-Influencing Act, commonly known as the Byrd amendment. The act applies to federally funding transactions. It expressly applies to the award of any federal contract, grant, or cooperative agreement, or the making of any federal loan. The statute prohibits the “recipient” of a federal contract, grant, or cooperative agreement, from expending appropriated funds to “pay any person for influencing or attempting to influence an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with a [covered transaction]”.

The article notes the problems with the legislation, and that much guidance intended to clarify it has been promulgated. The authors suggest the “the Byrd Amendment is a statutory

and regulatory nightmare”, and go on to propose some guidelines that companies can follow to determine if their actions are acceptable according to the act.

PRACTICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE

[25]

Volume 25, Issue 1, 1993

“Cost Performance Index Stability,” Maj. David A. Christensen, USAF, Ph.D. and Capt. Scott R Heise, USAF, pp. 7-16.

This article suggests that if a program is in an overrun status when it is 20 percent complete, it will, in all likelihood, be overrun at completion. The Cost Performance Index (CPI) is relatively stable after the 20 percent completion point; it is very seldom that a contractor improves markedly on this index after 20 percent of the program has been completed.

The CPI is a key indicator used to analyze cost and schedule performance data reported by defense contractors. The importance of the index was highlighted by the cancellation of the Navy’s A-12 stealth medium bomber program contractors. A stable CPI is important because it is used as a benchmark to assess the potential for cost overruns. Based on data from the Defense Acquisition Executive Summary (DAES) database, results indicate that the cumulative CPI is stable from the 20 percent completion point regardless of contract type, program, or service.

CPI is calculated by dividing the Budgeted Cost of Work Performed (BCWP) by the Actual Cost of Work Performed (ACWP). The Government can, conclude with some confidence that a contractor is in serious trouble when it overruns the budget beyond the 20 percent completion point.

THEORETICAL, POSITIVE, EMPIRICAL, INDUCTIVE

[31]

“Determining an Accurate Estimate at Completion,” Maj. David S. Christensen, USAF, Ph.D., pp. 17-26.

When the Secretary of Defense cancelled the Navy’s A-12 program in early 1991, he complained that no one could tell him how much it was going to cost. This article focuses on the first problem of determining an accurate Estimate at Completion (EAC) generation: the multitude of EAC formulas. Based on a review of 25 EAC studies and related research conducted over nearly two decades, certain generalizations about choosing an appropriate EAC formula are made. This article reports the results of three EAC studies and research related to evaluation. Generalizations useful for analysts and program managers an accurate EAC are also reported.

All EAC formulas use input data from the contractor. All EAC formulas are based on the combination of several data elements presented on the cost management report: budgeted cost of work scheduled (BCWS), budgeted cost of work performed (BCWP), and actual cost of work performed (ACWP). These data elements are usually reported monthly. Cumulative and averaged data can then be computed through the period of the contract’s life.

Comparative EAC studies attempted to determine the best predictive models. The article reviews some of the research and draws the following conclusions: The accuracy of

regression-based models has not been established. Averaging over shorter periods (such as 3 months) is more accurate than averaging over longer periods (such as 6-12 months), especially during the middle stages of a contract, when costs are often accelerating. The accuracy of index-based formulas depends on the type of system and on the stage and phase of the contract. Comparing the To-Complete Performance Index (TCPI) with the Cost Performance Index-cumulative (CPIc) and comparing the cost variance with the variance at completion are useful for evaluating the reasonableness of the contractor's EAC. The article uses the A-12 performance data to illustrate these conclusions.

PRACTICAL, NORMATIVE, EMPIRICAL, INDUCTIVE [31]

“A Protocol for Conducting Acquisition Reviews,” Martin I. Kestenbaum and Dr. Ronald L. Straight, pp. 27-40.

This article describes the sections of the *Procurement Review Guide*, which the authors developed. It goes over the structure and content of the *Guide*, and provides an example of a contract file checklist and quality rating form used for reviewing one of the eight functional areas. It describes and provides examples of management indicators and contracting benchmarks that are used to guide the quality of an office's procurement operation. The *Procurement Review Guide* was written to be a comprehensive, self-contained, simple, stand-alone document operating as an easy-to-follow road map for each review team.

PRACTICAL, NORMATIVE, NON-EMPIRICAL, DEDUCTIVE [23]

“Cost Accounting Standards Board- It's Back,” Darrel A. Sourwine, pp. 41-52.

This article reviews the Cost Accounting Standards that were addressed by the first Cost Accounting Standards Board that existed between 1970 and 1980. It details issues that the 1970's CASB addressed and recommends that the newly authorized Cost Accounting Standards Board modify some of them. These issues include selling and marketing costs, purchased labor, General and Administrative allocation base, franchise tax allocation, uncompensated overtime, accrued vacation, cost accounting practice changes.

New issues for the CASB to address are also detailed. These issues include joint venture/teaming, business combination asset revaluation, pensions, post-retirement health benefits, software capitalization, Material Management and Accounting System (MMAS), cost impact proposals, and automatic manufacturing systems.

THEORETICAL, NORMATIVE, NON-EMPIRICAL, DEDUCTIVE [6]

“Reducing the Waste and Expense of Litigation by Retaining Control of Your Dispute,” Stan Hinton, pp. 53-74.

This article discusses the resolution of disputes and the legal system. It details a court proceeding step by step and then offers several alternatives to the traditional legal process that contracting personnel should consider.

The article gives a lengthy step-by-step description of how a formal legal dispute resolution works. The process is lengthy, cumbersome, and expensive. He suggests that contracting personnel abdicate their responsibility when they lose control over their dispute and hand it over to lawyers and the legal system to solve. The legal system should be a last resort.

In resolving disputes, he recommends retaining control of yourself and your emotions, using your lawyer wisely, retaining control of your lawyer, and looking for alternatives to rote litigation at every major decision point. He recommends the use of Alternative Dispute Resolution (ADR) rather than litigation.

PRACTICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE [40]

Volume 25, Issue 2, 1994

“When a Claim is a *Claim*,” John B. Wyatt III, pp. 7-24.

This article examines the quagmire of what are the requirements of a claim within the Government contracts dispute process. He reaches the conclusion that there are no clear-cut rules for determining when a claim is a claim. The best advice for a contractor is to strictly comply with all the requirements of a claim as outlined in the FAR and case decisions. By doing this, a contractor can minimize the chances of a claim being rejected on a technicality rather than on the merits.

A prudent contractor should ensure that any submission purporting to be a claim always contains an express “request for a final decision”. If a contractor fails to request a final decision from the contracting officer, there is a risk that the dispute may not be formally recognized. When a contractor submits a claim, he should not express an interest in continuing negotiations, since that undermines the request for a final decision.

PRACTICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE [40]

“Partial “T4C” Versus Deductive Change: The Amount of the Decrease Is Not Always the Same,” Jerome S. Gabig, Jr., pp. 25-34.

There are two clauses in federal procurement contracts that permit the Government to unilaterally reduce some of the contractor’s performance obligations. Depending on the facts, the reduction can be processed under either the Termination for Convenience of the Government clause, or the Changes clause. The dollar amount of the price reduction in the contract, however, is calculated differently depending on whether the decrease is treated as a partial termination for convenience or a deductive change. There is no definitive rule that addresses which clause is appropriate for reduction in work. Under some circumstances, one clause can be more financially advantageous than the other.

Major reductions clearly fall under the T4C clause. Changes in quantity requirements of greater than twenty percent qualify as major. Minor reductions fall under the Changes clause. When the deleted work is neither major nor minor, the contracting officer has discretion to use either clause. There is not a “rule of thumb” to easily determine which clause is more beneficial

to a particular party. The article details how to determine the dollar change amount under each clause. Frequently, there will not be much difference in dollar amount between the two methods. Sometimes, however, it will make a significant difference. Each party should calculate how the deduction would be priced under both clauses. Where the Government is indecisive about selecting a clause, a contractor should consider recommending the one that best serves its interests.

PRACTICAL, NORMATIVE, NON-EMPIRICAL, DEDUCTIVE

[36]

“Acquisition Management Reviews: Typical Findings,” Martin Kestenbaum, CPCM, and Dr. Ronald L. Straight, pp. 35-42.

This article summarizes the results of numerous acquisition reviews conducted on civil agencies between 1984 and 1994. Problems fall into two main areas of deficiency: the communication between partners in the acquisition process and the professionalism of the acquisition work force. They found that project officers responsible for planning the acquisition process, the contracting officers responsible for awarding contracts, and the personnel responsible for contract administration do not communicate adequately among themselves. They found that the acquisition work force needs to exhibit greater professionalism in evaluation, negotiation, and post-award contract administration.

THEORETICAL, POSITIVE, EMPIRICAL, INDUCTIVE

[23]

“Resolving Disputes While Preserving Relationships,” Andre Long, pp. 43-50.

This article describes Alternative Dispute Resolution (ADR) in general. The use of ADR in place of litigation is recommended. In addition to the direct costs of pursuing litigation, there are other costs that are harder to quantify, including the destroyed relationship between the parties.

The Alternative Dispute Resolution Act is discussed. Mediation and mini-trial are described, along with partnering to prevent disputes in the first place. Litigation should always be the last choice in dispute resolution; it takes too long and costs too much. Effective alternatives, in the form of ADR techniques, are available and generally provide a more positive solution for both sides.

PRACTICAL, NORMATIVE, NOT EMPIRICAL, DEDUCTIVE

[40]

“Defense Contracting Impediments to Supplier Productivity and Quality Improvement,” Lt. Col. Carl R. Templin, Ph.D., pp. 51-62.

This article examines the impact of contracting policies and practices on defense contractors’ efforts to improve the productivity and quality of their operation through implementation of the Just-In-Time (JIT) philosophy. Defense contractors face a considerable amount of Government control over their operations, which makes it difficult to make some of the innovative changes to the production and purchasing function that JIT mandates. The JIT efforts of six contractors were examined to determine: the impact of 19 Government contracting

practices on their JIT initiatives, the JIT production and purchasing activities most seriously impacted, and changes the Government could initiate that would be most supportive of their JIT efforts.

The Government's subcontracting policy was found to negatively impact JIT efforts. On the whole, most of the contracting policies and practices evaluated did not have as serious an impact on JIT production and purchasing as the author anticipated. Contractors have considerable opportunity to improve their production and purchasing operations within Government contracting policy constraints. However, there are some policies that eventually may limit the full extent to which JIT methods can be implemented.

More companies are moving toward partnering relationships with their suppliers as they implement JIT in purchasing. This is sometimes limited by Government requirements for competition and its preference for low bidders.

THEORETICAL, NORMATIVE, EMPIRICAL, INDUCTIVE

[16]

“‘Reinventing’ the Government Contract for Services,” Robert J. Wehrle-Einhorn, pp. 63-72.

This article discusses the emerging policy of shifting to performance-based specifications for services. Implementation of performance-based contracting is likely to have a steep learning curve. The article offers suggestions for Government agencies to pool resources, learn from each other's experiences and make the implementation of this policy as painless and effective as possible.

The application of performance-based standards to Government contracting for services can be effective if its implementation is launched in a constructive way. Reinventing service contracts in this manner will not be easy, but it has the potential to be highly cost effective and to enhance the management of service contracts.

THEORETICAL, NORMATIVE, NON-EMPIRICAL, DEDUCTIVE

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Volume 26, Issue 1, 1995

“Task Order Contracts: Popular and Now ‘Legal,’ But New FAR Coverage Should Address Potential Problems,” Peter J. Ritenburg, pp. 1-14.

Recent legislation gives general authority to enter into single and multiple award task order contracts (for services) and delivery order contracts (for supplies), and grants specific authority to enter into single and multiple award task order contracts for advisory and assistance services.

The nature of task order contracts makes them susceptible to contract administration problems. This may be attributed to the fact that, unlike virtually every other type of contract, post-award administration of task order contracts involves elements (and the associated problems) of contract formation- specifically, the issuance of individual task orders which, under “traditional” federal procurement law, likely would have been separate contracts.

The implementing regulations need to provide further details in the areas of contract modification and out-of-scope task orders, mutuality of obligation, cost realism and buy-ins, organizational conflicts of interest, unauthorized personal service arrangements, and contractor performance of inherently Governmental functions.

The drafters of the new Federal Acquisition Regulation have an opportunity not only to implement statutory authority but also to provide guidelines, which anticipate and minimize the potential pitfalls that have often been a part of task order and similar contracts.

THEORETICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE [33]

“Caution! Slippery Fixed-Price Incentive Contracts Ahead,” Barry McVay, pp. 15-22.

This article reviews the mechanics of the fixed-price incentive, firm target (FPIF) contract. The fundamental characteristic of the fixed-price incentive contract is that the Government adjusts the contractor’s profit based on the actual allowable costs incurred during contract performance. The Government’s financial obligation is limited by the contract’s price ceiling. It is important to remember that the FPI contract is actually a mathematical equation consisting of several elements. Concentrating on a single element during negotiations without considering how the other elements are affected may result in a contract that fails to provide the contractor with sufficient motivation to control costs.

Specific examples are given demonstrating how the elements affect each other. If significant contract changes are expected; the FPI contract type should be avoided. The elements that interact include the target cost, the target profit, the share ratio, the price ceiling, and the point of total assumption. Above the point of total assumption, the contract is essentially a firm fixed price contract. The target cost is usually where the contractor has a 50 percent chance of under-running and a 50 percent chance of over-running, and the price ceiling is usually close to the contract’s maximum anticipated cost. The further apart the target cost and price ceiling are, the more uncertainty there is in contract performance. As the uncertainty increases, the Government should either assume more risk (and adjust the other FPI elements accordingly), or consider using some sort of cost reimbursement contract instead.

PRACTICAL, NORMATIVE, NON-EMPIRICAL, DEDUCTIVE [33]

“The Role of Configuration Management in the Acquisition Process,” Linda J. Gregory, pp. 23-36.

This article discusses the configuration management specialist’s responsibilities through the traditional sequence of solicitation phases, including requests for industry comment (RFIC), draft requests for proposal (RFP) review, proposal preparation, fact finding, and negotiation. During each phase of the solicitation process, one or more of the critical configuration management functions is highlighted. Critical functions include identification of the current baseline, control of changes to the baseline, the status of those changes at any point in time, and the audit to ensure compliance with requirements.

Configuration management cost estimating input and techniques for streamlining the acquisition process are also discussed.

PRACTICAL, POSITIVE, NON-EMPIRICAL, DEDUCTIVE

[13]

“Redistribution of Audit Resources Should Be Considered,” Norma C. Holter, pp. 37-44.

This article describes how the auditing of Government contractors has evolved into a time consuming and costly process that should be made less cumbersome. Results of a survey of Government contractors are summarized. The survey assessed the current state of the audit relationship between contractors and the Defense Contract Audit Agency (DCAA).

Deterioration of the contracting officer’s authority as the Government’s team leader and the apparent increase in DCAA authority was cited by the Packard Commission report as a principal cause of inefficiency in the audit process. Based on the survey findings, this situation has not changed. Contractors seem to have a hard time getting a copy of DCAA audit reports. Administrative contracting officers are often reluctant to release a copy of the audit report to the contractor, even though they are allowed to. Communication to the contractors of audit results could ease tensions, provide valuable feedback to contractors, and perhaps decrease litigation in the contract area.

Government auditing of contractors can be decreased without significantly increasing the risk to the Government. The vast majority of big defense contractors are audited yearly by the one of the major accounting firms. These companies have demonstrated controls in place. A small number of contractors are responsible for most of the defective pricing. The trend is that subcontract defective pricing is steadily increasing while prime contract defective pricing is decreasing. The audit of subcontractors should be expanded, and the audit of subcontractors new to Government work should be in a consulting rather than a punitive mode.

THEORETICAL, NORMATIVE, EMPIRICAL, INDUCTIVE

[47]

“Capturing Private R&D for Public Ends: The Government’s Use of FFRDCs,” Douglas L. Sanders, pp. 45-59.

This article gives the history of federally funded research and development centers (FFRDC), and lists the advantages and disadvantages, detailing the advantages and refuting the disadvantages. FFRDCs are a distinctive and useful addition to the research and development performers that are available to the federal Government. FFRDCs remain an effective means by which the Government can attract the quantity and quality of scientists and engineers it requires for certain tasks and at the same time ensure that they are dedicated to public goals. They are less susceptible to conflicts of interest that commercial research and development providers are.

THEORETICAL, POSITIVE, NON-EMPIRICAL, INDUCTIVE

[68]

“Best Value Contracts: Lessons Learned in Paving the Road to Quality,” Shelley Scott, pp. 1-12.

This article analyzes the Government’s best value process to provide a better understanding of some of its most difficult issues through a discussion of pertinent statutes and regulations, the impact of acquisition reform, implementation concerns, and lessons learned from selected protests.

The ‘competitive proposal’ procedure normally is used when the Government has a need to seek out quality, which cannot be determined by price alone, and is willing to pay more for better quality. The two approaches for selecting from competitive proposals are lowest price technically acceptable, and best value. This article focuses on best value, when the sourcing decision is made based on an evaluation of cost or price, and other factors. The best value approach gives the Government greater flexibility and discretion to make trade-offs between cost/price and quality factors such as technical approach, management capabilities, and past performance in selecting the proposal with the best combination of quality factors and cost.

Lessons learned are provided from best value procurements. The valuation criteria and their relative importance play a major role in any cost/technical trade-off analysis. Ultimately, however, the selection decision must revolve on the significance of the differences between proposals and to what extent the Government is able to demonstrate whether the superior quality of a proposal warrants the difference in cost. Excessive numbers of evaluation criteria make an evaluation overly complex and dilute the Government’s ability to effectively discriminate among the offerors.

The selection decision must be made within the framework of the stated evaluation criteria, but the agency has a lot of discretion in conducting the trade-off analysis as long as it is reasonable and demonstrates that the expected benefits are worth the premium in price. Many in the acquisition workforces do not clearly understand the difference between best value and low price technically acceptable approaches.

PRACTICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE

[34]

“Revisiting the Federal False Claims Act,” Carolyn B. Lamm and Abby Cohen Smutny, pp. 13-24.

This article presents a general discussion of the False Claims Act (FCA) and sets forth the basic elements of a violation under the act as well as possible resulting penalties. The FCA is one of the Government’s most potent weapons against fraud and corruption directed at the federal treasury.

The FCA imposes liability for treble damages and forfeitures on any person who makes or causes to be made a claim for payment on the U.S. Government that is false, fictitious, or fraudulent. More details are given on the provisions of the Act. The article then describes the steps to establishing liability under the FCA, and penalties for violations.

The U. S. Government's strengthened legal position following the 1986 amendments to the FCA has resulted in more frequent imposition of liability against companies and individuals who engage in fraudulent activities that cause financial loss to the United States. Companies and individuals faced with a U.S. Government investigation must act quickly to minimize their exposure, perhaps by hiring experienced counsel, conducting an internal investigation, analyzing any available defenses, and in some cases, considering whether to accept settlement terms offered by the Government.

THEORETICAL, POSITIVE, NON-EMPIRICAL, NO PARTICULAR LOGIC [40]

“The Economics of Progress Payments,” Dr. Stephen Hays Russell, pp. 25-38.

This article briefly reviews the history of progress payments, suggests the economic basis for Government-provided financing with progress payments, and critically analyzes the economics of setting progress payment rates. The setting of progress payment rates is addressed with regard to interrelationships between financial conditions and appropriate progress payment rates, and how the changing of rates likely impacts on U.S. Treasury borrowing, total costs to the Government, and borrowing.

Progress payments represent interest free working capital from the Government to the contractor. As such they are of considerable value and considerable controversy. Progress payments make up for the fact that in long-term, fixed-price defense contracts, the Government disallows interest expense. Interest expense is a recognized cost of doing business.

This article challenges two common and lingering views regarding progress payment rates. Contrary to popular opinion, reducing progress payment rates will not reduce total contract costs to the Government. Also, reducing progress payment rates will temporarily slow the rate of federal outlays, but this is a short-term affect only; it will not slow the permanent rate of outlays.

THEORETICAL, POSITIVE, EMPIRICAL, DEDUCTIVE [49]

“The Challenge of Eliminating Ozone-Depleting Chemicals from Acquisition Programs,” L. Susan Willard, CPCM, Dr. Michael E. Heberling, CPCM, and Dr. Charles A Bleckmann, pp. 39-50.

This article focuses on the impact of eliminating dependence on ozone depleting chemicals (ODCs) from major acquisition programs and assessed the degree of success of this task. Research in this article was from Air Force acquisition programs. The article addresses: how effectively the environmental requirement information was distributed to program directors or major programs, and whether they were provided with the tools and knowledge necessary to eliminate ODCs from their program, the status of efforts to eliminate ODCs, and the long term plan for eliminating ODCs from defense programs. This article also identifies lessons learned that the military may apply to future environmental initiatives.

Many acquisition initiatives address the increased emphasis on developing environmentally sensitive programs. The only feasible solution is to develop a strategic plan that

involved working with Congress on legislation and requirements and becoming involved with cooperative arrangements with other organizations in and outside of the federal Government to search for feasible solutions and combine research efforts. An overall environmental strategic plan would help to assure that environmental performance is designed early in the life cycle of a program where trade-offs could be assessed and balanced and impacts minimized.

THEORETICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE

[37]

“Privatization- An Analysis of Contracting Out of Government-Provided Services,” Joseph V. Rea and Dr. Kermit C. Zieg, Jr., pp. 51-64.

This article focuses on contracting out at the state and local level of Government provided services, and on the pivotal factors in influencing the success or failure of the contract. Cost savings are a major consideration in deciding to outsource services, so cost analysis to determine the potential for savings is the starting point when contemplating contracting out. Cost analysis is more complex than it may first appear.

The role of competition and the marketplace is discussed, and it is noted that there must be competition in order to generate savings and maintain quality service. The greater the number of businesses willing to offer their services, the better the possibility of obtaining a qualified and reliable contractor. The article addresses legislative concerns and obstacles toward contracting out at the state and local level.

The structure of the solicitation and the contract are important to successfully source out. Three fundamental features to a winning solicitation and subsequent contract are clear, concise, and comprehensive specifications; a timely and accurate performance monitoring system; and, terms and conditions that incentivize the contractor. The article gives a case study and analysis of contracting out county vehicle maintenance service in Fairfax County, Virginia.

THEORETICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE

[10]

“Procureosclerosis,” Dr. Joseph A. Pegnato, pp. 65-76.

Use of the title term suggests that the federal procurement system is not well and shows few signs of improving, despite recent attempts at reform. This article reviews the history of the federal procurement system and how regulatory constraints have built up over time. The cycle of procurement scandal followed by increased regulation has happened many times, with the most recent example being “Operation Ill Wind” being followed by procurement integrity legislation.

Steven Kelman, the administrator of the Office of Federal Procurement Policy (OFPP) suggests that fighting procurement corruption through regulation is a terrible idea for several reasons. It is not very effective. It penalizes many for the crimes of the few. Alternatives are likely to be at least as effective. The procurement regulatory system exacts an enormous toll on the quality of Government performance.

The article suggests that the most popular historical fix to procurement problems-increased competition- is counterproductive. Changes to the federal procurement system

sometimes have unintended impacts. For example, the Competition in Contracting Act (CICA) of 1994 revised the procurement system to achieve a higher level of competition in order to reduce overpricing and to reduce the probability of fraud. While such a change may lead to more competition, it also can produce unintended consequences such as longer procurement processing times and delays due to more protests. The federal procurement system is not just a simple administrative process that can easily be transposed into an efficient and responsive system. Procurement officials should be given greater discretion, and management decisions should be based less on rules and more on professional judgment.

The author is skeptical of the Federal Acquisition Streamlining Act of 1994 having much impact. If the Government procurement system is to be reinvented, the focus cannot be just on the agencies, but it must include Congress, the courts, and the organized interests that make effective use of Congress and the courts.

THEORETICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE

[24]

Volume 27, Issue 1, 1996

“The Mediation Alternative: Guiding the Acquisition Work Force from Theory to Practice,” Andre Long and Robert J. Wehrle-Einhorn, pp. 1-8.

This article describes how mediation, one form of Alternative Dispute Resolution (ADR) is taught at the Air Force Institute of Technology. The focus of mediation and mediation education is to shift the usual emphasis on an adversarial method of dispute resolution to a cooperative consensus-based approach. With mediation, the disputants voluntarily agree to a structured negotiation coordinated by a neutral third party, or mediator. The mediator plays a key role in helping the parties articulate or clarify their objectives, overcome misunderstandings, express emotional concerns, and avoid other communication breakdowns.

In teaching contracting personnel, the use of actual case studies and simulations based on actual contracting disputes is most effective. The article details the techniques of mediation that are taught. Simulations, videos, and case studies are the principal ways to help students learn to become cooperative and innovative problem solvers in complex situations.

THEORETICAL, POSITIVE, NON-EMPIRICAL, NO PARTICULAR LOGIC

[40]

“Privatization: A Coming Wave for Federal Information Technology Requirements,” Jerome S. Gabig, Jr., pp. 9-24.

The author uses privatization as a synonym for outsourcing. This article addresses outsourcing (“contacting out”), rather than privatization (which entails turning over Government owned facilities to a non-Government entity). He focuses mostly on outsourcing in general, and some on the outsourcing of technology/information system requirements in particular.

It appears that the Department of Defense will be outsourcing more of its requirements to develop and maintain software. Although there are many advantages to outsourcing as shown by the pervasive trend within large corporations to outsource information systems, the

anticipated cost savings of approximately 20 percent is probably the major reason for DoD's emphasis on contracting out. OMB Circular A-76 establishes the procedure that an agency must follow to determine if a commercial activity should be outsourced. If an agency decides, based on lower costs, to retain a commercial activity in-house, the decision generally must be supported by a cost comparison. Despite the detailed calculations that underlie a cost comparison, the fundamental differences between the public and private sector make it hard to compare costs. Additionally, an agency has to obligation to create a level playing field. Parties that are adversely affected by a cost comparison often challenge the agency's decision through appeals, protests or litigation.

THEORETICAL, POSITIVE, NON-EMPIRICAL, DEDUCTIVE

[69]

“Evaluation of Life Cycle Costs: The Need for Precise Criteria,” Marlyn Corbin, pp. 25-34.

Recently, the General Accounting Office (GAO) has sustained protest challenges to the Air Force's Life Cycle Cost (LCC) evaluation of offerors' proposals. To avoid future problems in this area, source selection officials should carefully craft the LCC evaluation criteria and have the evaluator use that criteria to carefully analyze offerors' proposals and provide a written assessment of each offeror's LCC. Since there is scarce regulatory guidance in this area, relevant GAO protests decisions, discussed in this article, were analyzed for lessons learned to assist agencies in using LCC evaluation factors.

In using a LCC evaluation factor, the solicitation must clearly specify which costs will be evaluated. The methodology used by an agency in evaluating LCC factors must be reasonably adequate and provide some measure of confidence that the costs proposed are reasonable realistic. Under GAO's discovery rules, a protestor's lawyer will probably be able to gain access to the agency's LCC evaluation. The article offers more lessons learned from protests sustained by the GAO.

Procurement personnel must be aware of the challenges they will encounter when LCC is part of the evaluation for award. It is complex to properly establish LCC factors and to apply those factors to determine which proposal offers the lowest LCC. In all LCC procurements, the contracting officer must be aware of how the LCC proposals are to be evaluated and how that evaluation will effect other areas of the proposal. He should consider the use of LCC experts to assist in source selection and, if necessary, to respond to protests.

THEORETICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE

[46]

“Managing Electronic Commerce on the Federal Acquisition Computer Network (FACNET),” Christopher R. Yukins, pp. 35-50.

This article reviews how FACNET emerged as part of a broader scheme of acquisition reforms. It explains how the federal Government is implementing FACNET and describes the standards, which are known as the ASNI ASC X12 standards, through which electronic

transactions are carried on FACNET. It outlines some of the costs and benefits that managers should weigh before utilizing the FACNET system.

The Federal Acquisition Streamlining Act (FASA) of 1994 requires the Government to implement a Government-wide system for electronic commerce, the Federal Acquisition Computer Network (FACNET), by the year 2000. By then, the federal Government plans to use computers to conduct 75 percent of all practicable transactions. This electronic commerce/electronic data interchange (EC/EDI) system will be used initially for small transactions, and then expanded to include all practicable federal procurements.

Implementation of FACNET has been far slower than expected. Although many DOD components are fully capable of using electronic transactions, other agencies, and other DOD components lag far behind. On the contractor side, although the DOD hopes to have 350,000 of its contractors and suppliers online by the end of 1996, only 1300 were on FACNET by the end of 1995.

The article notes that costs of doing EC/EDI on the Internet would be much cheaper than the system set up for FACNET, but notes two major obstacles to doing EC over the Internet. The first reason is political: Government policy makers decided to rely heavily on a FACNET architecture that depends on proprietary networks. Secondly, since the Internet is open and broadly accessible, security of transactions is a concern.

EC is coming to the federal Government; the cost savings of EDI are just too compelling for the federal Government or its contractors to ignore. When and how the Government will fully implement EC remains an open question. In the meantime, contractors should begin to understand and work with EC/EDI so that they will be fully prepared for the Government's growing use of EC.

PRACTICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE

[53]

“An Examination of Agreement Type, Firm Size, and Other Factors Affecting the Commercialization of Air Force Technology,” Maj. Richard M. Franza, USAF, and Capt. Robert S. Widman, USAF, pp. 51-71.

This article examines the influence of five factors as influencing successful commercial innovation in the private economy. The factors are firm size, past innovative experience, past experience in the technology area, the maturity of the technology, and the contract mechanism employed by the Government to stimulate the innovation. This study examines the influence of these business characteristics on the commercialization of technology originally developed for or by the U.S. Air Force.

The intent of this article is to discover if these factors influence successful commercial innovation when a Government agency is involved in the process through the use of a Cooperative Research and Development Agreement (CRADA) or a Small Business Innovative Research (SBIR) contract.

A CRADA promotes technology transfer through technical assistance, access to Government facilities, and direct involvement of Government research employees working with

private firms. Unlike typical Government research and development contracts, CRADAs do not allow participants to receive direct Government funding for their projects. An SBIR contract promotes the commercialization of technologies by small business through direct funding of research efforts with little access to other Government resources.

Significant findings in this article for SBIR contracts include the following: The SBIR contract type is more conducive to commercialization than the CRADA. Past private innovation experience positively related to commercialization. Maturity of technology received was positively related to commercialization.

The CRADA agreement type of contract is less conducive to commercialization than the SBIR. Absolute firm size related negatively to commercialization. Firm experience in the technology area to which the innovation applied positively related to commercialization. Maturity to technology received related positively to commercialization.

THEORETICAL, NORMATIVE, EMPIRICAL, INDUCTIVE

[68]

Volume 27, Issue 2, 1996

“Fixed Costs and Contract Delay,” Howard N. Kenyon, Jr., pp. 1-14.

This article examines the factual economic circumstances of a customer caused contract delay and the risk allocations attendant to fixed price contracts and changes to determine what damages the contractor actually incurs and what liability the customer has due to delay of work regarding fixed costs. It reviews legal cases in this area, and expands upon them.

The term *unabsorbed overhead* has long been used in connection with contract delays to identify the nature of damages suffered by a contractor that has been delayed in performance of its work. The term has a different meaning from extended overhead, a similar and related concept of delay damages. Unabsorbed overhead has been defined as “that amount of indirect expense actually incurred which would have been allocable to the contract had the delay not occurred, and is not recovered in revenue from any other work”. Unabsorbed overhead occurs in the original contract period.

The article discusses fixed costs and contract profitability, then goes on to consider the fixed cost consequence of delay. The final major topic is the mitigation of fixed costs during the delay. Mitigation occurs when alternate use is made of the idle capacity by the contractor, either by rescheduling work that is already contracted for to work on it sooner than planned, or new work is done that would have not been possible if the delay had not occurred.

THEORETICAL, POSITIVE, NON-EMPIRICAL, DEDUCTIVE

[32]

“Beyond Procurement Contracts: Opportunities for High-Technology Partnerships with the Federal Government,” Michael T. Janik and Christopher C. Bouquet, pp. 15-28.

This article details agreements known as cooperative agreements and cooperative research and development agreements (CRADAs). These agreements are used by the Government to promote research and development.

Partnering agreements have some key features that distinguish them from procurement contracts. In a procurement contract, the Government wants to ensure it receives the precise type of goods or services it needs. In a partnering arrangement, the Government has the generalized goal of stimulating some type of research activity. Many contractors may be surprised to see the flexibility of dealing with the Government through cooperative agreements or CRADAs. Many guiding regulations that apply to standard procurement contracts do not apply to cooperative agreements or CRADAs, including the Federal Acquisition Regulations (FAR), Truth in Negotiations Act (TINA) requirements, Competition in Contracting Act (CICA) requirements, and Cost Accounting Standards (CAS).

The article discusses briefly the Department of Energy, NASA, DOD and Commerce Department's use of cooperative agreements and CRADAs.

These types of agreements have unique patent rights policies. Contractors usually do not enter into cooperative agreements or CRADAs for any immediate financial gain because the Government is either providing partial funding (in the case of a cooperative agreement) or no funding (in the case of a CRADA). Instead, the principal benefit to a contractor is the opportunity to secure the intellectual property rights on technologies developed under the partnering agreement with the Government.

Partnering agreements present complex legal questions requiring legal advice. They offer significantly greater negotiating flexibility and significantly fewer administrative burdens. Commercial organizations seeking to keep pace with a dynamic marketplace are well advised to consider partnering with the federal Government. The benefits are considerable: significant intellectual property rights and Government assistance in developing inventions.

THEORETICAL, POSITIVE, NON-EMPIRICAL, DEDUCTIVE

[68]

“Avoiding Foreign Corrupt Practices in International Government Sales,” Donald E Sovie, pp. 29-42.

This article examines the fundamentals of the Foreign Corrupt Practices Act (FCPA) and its bribery prohibition and accounting requirements. It then offers suggestions for reducing the risk of violating the FCPA. Because of the dramatic decrease in U.S. defense procurement spending, companies have increased their pursuit of foreign contracts. Since 1992, a record number of companies and individuals have been found guilty of violating the provisions of the FCPA. It is important for contractors to be aware of the provisions of the Act.

Suggestions for reducing the risk in violating the FCPA can be categorized in six areas: implementing compliance policies and programs, retaining foreign agents, paying for travel and lodging expenses for foreign representatives, using Department of Justice guidance opinions, dealing with changes in circumstances that affect contingent fee compensation commitments, and

overlapping of the FCPA with certain requirements in the Foreign Military Financing (FMF) Program.

PRACTICAL, NORMATIVE, NON-EMPIRICAL, NO PARTICULAR LOGIC [63]

“Open Issues in Acquisition Reform,” Michael E. Heberling, Ph.D., CPCM, pp. 43-58.

There is increasing emphasis within the Government to use more commercial items to meet defense requirements. With affordability becoming a critical issue in weapon system acquisition, the DOD has no choice but to turn to the commercial sector to meet its military requirements. Major initiatives in acquisition reform are making it relatively easy to take advantage of the commercial sector for commercial off-the-shelf items. Problems arise, however, when the DOD turns to the commercial sector to meet its military unique requirements. Contracting officers must contend with pricing regulations that discourage dual-use capable commercial firms from seeking defense work. Although regulations such as the Truth in Negotiations Act (TINA) and the Cost Accounting Standards (CAS) were originally designed to protect the Government’s interests, these regulations now serve to impede access to the advanced technologies and capabilities of the commercial sector.

The Government should relax TINA and CAS requirements. Companies should be able to produce both commercial and military unique products without having to alter their accounting system or management practices. To facilitate this process, there must be a change in the definition of a commercial item and in the way DOD verifies a fair and reasonable price. Although the potential for fraud will always exist (with or without TINA and CAS), the ability to benefit from buying more easily from dual-use firms will offset this risk. A cultural change from a risk-averse to a risk-management procurement system will require better management support at all levels and better training of the acquisition work force in price analysis and market research.

THEORETICAL, NORMATIVE, NON-EMPIRICAL, DEDUCTIVE [24]

“Corporate Environmental Responsibility: An Examination of Incentivization,” Maj. Richard A. L’Heureux, USAF, Ph.D., CPCM, and 1Lt. Jennifer A. Block, USAF, pp. 59-70.

The study described in this article examined the relationship between various incentive arrangements and corporate environmental responsibility. Incentives with the greatest potential for encouraging proactive corporate environmental responsibility are identified. Results suggest policy incentives, rather than specific contract incentives, will be the most effective at producing the kind of organizational environmental awareness the Government is looking for from its contractors.

Many believe it is possible to incentivize corporate environmental responsibility.

Financial/economic incentives are the most effective means for encouraging a proactive environmental response from defense contractors. It is not clear when in the acquisition process the incentives should be applied, or what form they should take.

Contract incentives more closely resemble the hierarchical governance system in that they use a formal set of rules (the contract and its provisions) to control the contractor's behavior and encourage compliance with Government goals. Policy incentives, on the other hand, more closely resemble market forces in that they lower the cost risks for any contractor to be environmentally proactive without specifically targeting a particular exchange. Policy incentives are not limited to a particular production contract; they are applied across a wide range of exchanges.

The contractor is encouraged through a separate economic mechanism to be environmentally responsible because its compensation for environmental improvement is not conveyed through a single production contract.

THEORETICAL, POSITIVE, EMPIRICAL, INDUCTIVE

[37]

Volume 28, Issue 1, 1997

“Department of Defense Instructional Systems Design for the Acquisition/Contracting Workforce: A View From the Inside,” Robert L Hawkins, Ed.D. and Linda Granzow, CPCM, pp.1-10.

This article is about understanding the conversions in the educational instructional systems designs (ISD) intended to foster the development of a better-educated and trained DOD acquisition work force. It focuses primarily on the contracting profession.

The Defense Workforce Improvement Act (DAWIA) has been cause for a change in the instructional designs for training and education of acquisition personnel in DOD. Fundamental changes have been applied at a range of levels, from designing a complete curriculum to creating an entire school system, the Defense Acquisition University (DAU).

The article describes competency-based learning. The goal of competency based learning is not to have education and training represent a test of endurance but, instead, a proof of a student's academic and professional abilities. It goes on to suggest that competency based learning should replace the current approach, which focuses on educational process instead of educational outcomes. This will result in the acquisition work force being better trained. Better curriculum and better tests and assessments will help raise standards. Competency or performance based instructional systems are further described, and it is noted that DAU is adopting them.

PROFESSIONAL, POSITIVE, NON-EMPIRICAL, DEDUCTIVE

[26]

“Applying Commercial Processes to Defense Acquisition,” Mary E. Kinsella and Michael E. Heberling, PhD., CPCM, pp. 11-20.

This article notes that DOD is turning more and more to the commercial sector to meet its materiel requirements. The defense community is changing the acquisition environment to allow for new business practices and commercialization. This article focuses on one example situation to examine issues raised during the implementation of this approach.

In the past, many commercial firms have chosen to not do business with DOD. Some of the reasons are discussed. They include Cost Accounting Standards, socio-economic provisions, data rights, certifications, and cost and pricing data. These requirements make it more expensive to sell to the Government, and deter some companies from doing business with the Government. Requiring these provisions add significantly to the cost of products that the Government buys, up to 40 percent in one example cited.

FASA and FARA have eased up some of the requirements. To involve world-class commercial firms in defense work requires the development of a business model that balances the commercial firm's desire for normal profits and restricted access to cost data with the military's desire for affordable products. Significant savings by DOD can be achieved by easing up on some of the traditional Government restrictions.

THEORETICAL, POSITIVE, NON-EMPIRICAL, DEDUCTIVE [24]

“Getting After the ‘Bad Guys’: Developing a Profile of the Fraudulent Contractor,” Maj Richard A. L’Heureux, USAF, Ph.D., CPCM, and Capt Dwayne P. Sellers, USAF, pp.21-30.

This article attempts to identify characteristics of contractor that is more likely to participate in fraudulent activity against the Government, in order to assist investigative agencies in focusing their efforts toward these contractors. From a review of the literature, the authors concluded that there are three organizational factors that researchers consistently link to illegal corporate behavior: large company size, lower levels of resource slack, and a past record of poor financial performance. With their own research, they then sought to validate these findings.

In testing these three ideas empirically, the authors found that firm size does contribute significantly to an explanation of fraudulent behavior. Past poor financial performance as they measured it, did not contribute significantly to an explanation of fraudulent behavior, however, they indicated that they should have used a more reliable measure to indicate financial stress. On the issue of resource slack, the results were not conclusive. They call for further research.

THEORETICAL, POSITIVE, EMPIRICAL, INDUCTIVE [54]

“A Survey of Federal Employment Laws Applicable to Government Contractors,” James C. Fontana, pp. 31-47.

This article outlines many common employment related laws and issues that specifically impact Government contractors. Such laws are found in federal statutes, and regulations, executive orders, and in the Federal Acquisition Regulation (FAR).

The article goes over the broad requirements of the Service Contract Act, the Davis-Bacon Act, the Walsh-Healey Public Contracts Act, other wage protection statutes, the Rehabilitation Act of 1973, the Vietnam Era Veterans' Readjustment Act, and substance abuse programs.

The last several years have brought sweeping reform legislation. FASA has changed, to a limited extent, the applicability of some of these laws.

The complex statutes, rules, and regulations applicable to federal Government contracts provide unique challenges to human resource professionals and to contract administrators. Although procurement reforms have attempted to place federal contracts more on par with the commercial world, little has been done with regard to properly reforming laws affecting federal Government contract employees.

THEORETICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE [57]

Volume 28, Issue 2, 1997

“Winstar and Yankee Atomic: The Government’s Power to Retroactively Alter Contracts,” Deneen J. Melander and Nancy R. Wagner, pp. 1-10.

This article examines the Government’s unique ability to avoid and retroactively alter its contractual obligations. The focus is on assessing the impact of recent court decisions. Courts have devised four doctrines the Government may use to avoid its contractual obligations due to subsequent sovereign actions such as the changing of laws or regulations. The article reviews the four special defenses.

In *United States v. Winstar*, the Supreme Court rejected each of the four special defenses. The Court’s opinion in *Winstar* was that the Government should be treated the same as a private contractor. The contract in *Winstar* reflected an agreement between the Government and Winstar, and the Government would pay damages if it exercised its power to change the regulations that substantially affected Winstar.

Yankee Atomic Electric Co. v. United States was the first appeals court case to apply the *Winstar* decision. The Federal Circuit court decision seems to contradict *Winstar*. It appears that rather than limit the Government’s ability to renege on its contractual promises through subsequent legislation, the *Yankee Atomic* decision appears to broaden the Government’s unilateral ability to retroactively alter its contractual obligations. Yankee Atomic is appealing to the Supreme Court.

The article closes with specific suggestions for items for contractors to include in contracts with the Government to prevent retroactive changes, in light of the *Yankee Atomic* decision.

PRACTICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE [32]

“Disputes Resolutions: What Does it Take to Succeed with ADR?” Maj Richard A. L’Heureux, 1Lt Patrick F. Hopper, and Andre Long, pp. 11-20.

This article identifies the conditions that are most likely to produce a successful alternative dispute resolution (ADR) experience. The article analyzes what factors lead to successful implementation of ADR techniques and the extent to which these antecedents influence successful ADR outcome.

The article reviews some of the benefits of ADR and describes negotiation, facilitation, mediation, mediation-arbitration, mini-trial, arbitration, partnering, and early neutral evaluation.

From an in-depth examination of four cases, the authors suggest that there are five conditions that lend themselves to successful application of ADR techniques. First, the parties should be part of a long-term relationship. Second, there must be an established process for ADR to work- one that is well recognized by both parties. Third, success was greatest when senior management supported and encouraged the use of ADR. Fourth, the parties must have confidence that ADR will work- that it provides a fair, lasting solution to their dispute. Lastly, ADR success was partially dependent on the economic motivation of the parties. If a party believes its chance of success in litigation is high, and is also confident that the benefits of winning will be great, he is less likely to favor ADR over litigation.

PRACTICAL, NORMATIVE, EMPIRICAL, INDUCTIVE [40]

“Micropurchases and Mandatory Sources,” MAJ Brian S. Frye, USA, pp. 21-34.

This article presents a case for discontinuing the applicability of three mandatory source programs to purchases below the micropurchase threshold. Beginning with a review of recent acquisition reform legislation, it then describes the three programs and discusses the micropurchase process, particularly with respect to the use of Government purchase cards. It reviews past procurement reform reports and analyzes relevant policy considerations they pose.

The article concludes that the mandatory sources should not remain applicable below the micropurchase threshold. Mandatory sources have become more customer-friendly, but in many instances, the requirement to use them limits the exercise of sound business judgment by federal employees. Ending the mandatory status of these sources below the micropurchase threshold can be done without threatening the viability of these programs, and will help make Government contracting more efficient.

THEORETICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE [62]

“The Christian Doctrine -‘Hey, I Didn’t Agree to That!’” Jerome S. Gabig, Jr., Paul A. Debolt, and Johanna A. Reed, CPCM, pp. 35-47.

This article provides an overview of the *Christian* doctrine and identifies areas where courts and boards have applied it. Since 1963, both the courts and boards of contract appeals have used the Christian doctrine to incorporate, “as a matter of law,” mandatory procurement clauses into Government contracts. If a clause is mandatory for the Government to put in a contract, or if it is a “deeply ingrained procurement policy”, then the clause is considered to be

in the contract, even if the Government contracting officer failed to actually include it in the contract.

To avoid being taken by surprise, Government contractors must keep abreast of required regulations to ensure they are not at a disadvantage because a mandatory clause was not included in the original written contract. If the contract does not contain an authorized deviation for an omitted clause, or if a contracting officer mistakenly concluded that a clause did not apply, the contractor may be forced to incur costs or obligations it did not anticipate when he signed the contract. The article contains a helpful table that summarizes applications of the Christian doctrine.

PRACTICAL, NORMATIVE, NON-EMPIRICAL, INDUCTIVE [37]
Volume 29, Issue 1, 1998

“COTS - Uprating and the Government Contractor Defense”, Rocco J. Maffei, and Jason J. Rickter, pp. 1-14.

The Government contractor defense historically has protected contractors from liability for the use of a product that was designed pursuant to a Government contract. This article addresses the history, rationale, and the elements of the defense, and the application of the defense to non-military contractors. To qualify for the defense, contractors should be able to demonstrate the Government approved reasonably precise specifications, prove the equipment conformed to the Government specifications, and warn the Government about dangers in the use of the equipment known to the contractor but not the Government.

The Government contractor defense continues to have significant value. The Government avoids the cost of liability that would be passed on to it by contractors. The Government is more able to rely on contractors as a source for affordable and innovative technology solutions.

PRACTICAL, NORMATIVE, EMPIRICAL, INDUCTIVE [61]

“Alpha Contracting- JSOW Style”, Dr. Mark E. Nissen, pp. 15-32.

This article describes alpha contracting and a number of acquisition reform techniques that have been successfully employed in the procurement of the Joint Stand-Off Weapon (JSOW), a major weapon system. The JSOW system and program are discussed, followed by a description of the traditional contracting process. Using the process descriptions and the JSOW experience, the author describes a decision model that could be used to assess the likelihood of alpha contracting success.

PRACTICAL, POSITIVE, EMPIRICAL, INDUCTIVE [50]

“The Brokering Regulations of the U. S. Department of State: More Than Meets the Eye”, Frederick F. Shaheen and Joanne L. Zimolzak, pp. 33-40.

This article discusses the regulations implementing the 1996 Brokering Amendment to the U. S. Arms Export Control Act. The legislative background is given, and then the regulation is

described. The regulation imposes new requirements on business and regulators regarding the export of defense equipment. Some brokering activities require prior approval and others just require prior notification to regulators.

PRACTICAL, POSITIVE, EMPIRICAL, INDUCTIVE

[63]

“Recovering the Costs of DOL Wage Increases Under the Service Contract Act”, Allen Cannon III and Richard B. Clifford, Jr., pp. 41-53.

The federal Government is spending more money on service contracts over the last decade. Some special rules and regulations apply to federal service contracting. The Department of Labor may dictate the minimum wages that a contractor must pay its employees. This article gives an overview of the Service Contract Act and the process the Department of Labor uses to determine wage rates applicable to employees under Government contracts. It reviews the means used by contractors to recover their labor costs increase through contractual remedy-granting clauses. Various common law theories of recovery that contractors use to persuade the courts and boards of contract appeal to grant relief are described.

PRACTICAL, POSITIVE, EMPIRICAL, INDUCTIVE

[67]

Volume 29, Issue 2, 1999

“Other Transactions are FAR Out!”, Beej Jasper, pp. 1-10.

This article is on a special form of buying arrangement called “other transactions” (OT’s), which are “other” than Federal Acquisition Regulation (FAR) type contracts. It details the two types of other transactions; one is for military prototypes and the other is for research. OT’s for research leverage Government dollars by encouraging significant cost sharing by the participating party. OT’s for military prototypes may involve the adaptation, testing, or integration of commercial items for military purposes. The article goes on to discuss property and data rights and foreign access to technology under OT’s. OT’s are viewed by some as a way to integrate the civil and military technology bases, to help the US military affordably maintain superiority.

PRACTICAL, POSITIVE, EMPIRICAL, INDUCTIVE.

[33]

“Award Fee Assessment-“Out of the Box”, Frank H. Malsbury, CPCM, pp 11-20.

This article presents a template for a contracting award fee plan that offers ease of scoring in a practical approach. Award fee assessments that allow for fast, effective, and objective approaches can financially motivate a contractor to do what the customer wants. With an award fee plan there is a means to reorganize priorities periodically during the execution of the program.

PRACTICAL, POSITIVE, NOT EMPIRICAL, INDUCTIVE.

[33]

“An Examination of the Impacts of Commercialization on the Ability of Small Business to Provide Research and Development Innovation to the Department of Defense”, Capt Jennifer J. Thorpe, USAF, and Lt Col Richard A. L’Heureaux, USAF, pp. 21-29.

This article examines the impacts of commercialization on the ability of small business to provide research and development innovation to the Department of Defense. The authors used interviews and case studies to gather information from small businesses on this topic. One program, the Small Business Research and Innovation Program (SBIR), may be incentivizing the small business to do less basic research and more reengineering of known technologies. The Government’s emphasis on near-term commercial viability may be impairing the participant’s ability to develop the kinds of innovative solutions that the program was intended to promote. Program participants also expressed a desire for the Government to make the program less cumbersome.

THEORETICAL, POSITIVE, EMPIRICAL, INDUCTIVE [38]

“A Guide to Procurement Debriefings and Federal Bid Protest Litigation”, Michael W. Clancy, pp. 30-39.

This article explores the debriefing and bid protest process in federal negotiated procurements. Debriefing requirements are discussed, along with the types of issues that may form the grounds for a protest. The article discusses the bid protest at the various forums that the protestor can use, including the contracting agency, the General Accounting Office, the U.S. Court of Federal Claims, and Federal District Courts. Procedures for filing and pursuing a protest in those different venues are briefly reviewed, along with the rights of the contract awardees in bid protest litigation to defend the contract award. Finally, the article discusses the business and legal considerations that may influence a company’s selection of a particular bid protest forum.

PRACTICAL, POSITIVE, EMPIRICAL, INDUCTIVE [30]

“The FAR 15 Rewrite – Two Years Later – A Section By Section Review”, David B. Dempsey, pp. 40-54.

The rewrite of the Part 15 of the Federal Acquisition Regulation gives the contracting officer a high degree of flexibility in how he conducts an acquisition, evaluates an offer, and awards a contract. The exercise of his business discretion is enhanced by the rewrite. There are now few restrictions on a contracting officer’s ability to communicate with the contracting community regarding the identification of requirements, development of the solicitation, his award of the contract. Contractors received a significantly enhanced ability to participate in the acquisition process and to obtain more information from the Government through the “exchange” process. Both the contracting officer and contractors will need to act with the discipline the rewrite assumes in order to maintain the fairness and integrity that characterizes Government procurement.

PRACTICAL, POSITIVE, NOT EMPIRICAL, NO PARTICULAR LOGIC [25]

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APPENDIX B

SUBJECT MATTER CATEGORIES

FOR *JOURNAL OF SUPPLY CHAIN MANAGEMENT* ARTICLES

Topics

- A. Inventory Management
- B. Pricing Practices and Contracts
- C. Supplier Selection and Development
- D. Personnel and Leadership
- E. Purchasing Planning, Policies, and Organization
- F. Strategic Purchasing Planning
- G. Professionalism in Purchasing
- H. Purchasing Effectiveness
- I. Role of Purchasing in Business and Other Organizations
- J. Purchasing Education
- K. Computer-Based Systems
- L. Legal Aspects of Purchasing
- M. Purchasing Transportation Services
- N. Ethical Aspects of Purchasing
- O. International Buying
- P. Government Procurement
- Q. Negotiation
- R. Purchasing Research, Planning, and Budgeting
- S. Procurement of Capital Equipment
- T. Make or Buy Decisions
- U. Receiving and Stores
- V. Quality and Quality Assurance
- W. Value Analysis
- X. Disposal of Scrap, Surplus, or Obsolete Material
- Y. Other
 - Y1. Industrial Buyer Behavior
 - Y2. Marketing-Related Topics
 - Y3. Relationship Between Purchasing and
Other Functional Areas
 - Y4. Miscellaneous

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APPENDIX C

***Journal of Supply Chain Management* Article Classification List**

This appendix displays how the researcher classified particular articles published in the *Journal of Supply Chain Management* from Volume 23, Issue 1 (1987) through Volume 36, Issue 1 (2000). The applicable Subject Category, listed in Appendix C, is bracketed ([]).

Volume 23, Issue 1, 1987

- Price Adjustment Clauses Based on Cost Indices, J.M. Caltrider, pp.2-6,
Practical, Positive, Non-Empirical, No Particular Logic, [B]
- The Buyer-Seller Linkage in a Just-in Time Environment, C.R. O'Neal, pp 7-13,
Theoretical, Normative, Empirical, Inductive, [A]
- Procurement in Large-Scale Oil and Gas Projects, E.A. Silver, pp. 14-18,
Case, Normative, Empirical, Inductive, [I]
- Single Sourcing: A Management Tool for the Quality Supplier, M. Treleven, pp. 19-24,
Theoretical, Positive, Non-Empirical, Deductive, [C]
- Purchasing Decisions Considering Future Price Increases: An Empirical Approach, P.C. Jordan, pp. 25-30, Practical, Normative, Non-Empirical, Deductive, [A]

Volume 23, Issue 2, 1987

- Countertrade: Another Horizon for Purchasing, W.E. Norquist, pp. 2-6, Theoretical,
Positive, Non-Empirical, No Particular Logic, [O]
- Supplier Selection Strategies, W.R. Soukup, pp. 7-12, Practical, Normative, Non-Empirical,
Deductive, [C]
- Education and Training for Successful EDI Implementation, J.R. Carter, R.M. Monczka,
K.S. Clauson, and T.P. Zelinski, pp. 13-20, Theoretical Normative, Empirical, Inductive, [J]
- Taming the File Maintenance Monster: A Case Study, J. Holstein, pp. 21-23,
Case, Normative, Non-Empirical, Inductive, [K]
- JIT Purchasing: Impact of Freight and Inventory Costs, A. Ansari and j. Heckel, pp 24-28,
Theoretical, Normative, Non-Empirical, Inductive

Volume 23, Issue 3, 1987

- Purchasing and Profit: Contributions Worth Measuring, K. Beidelman, pp. 2-9,
Theoretical, Normative, Non-Empirical, Deductive, [I]
- Purchasing Performance: What Makes the Magic?, J.L. Cavinato, pp. 10-16,
Theoretical, Normative, Non-Empirical, Inductive, [I]
- Sourcing from Less Developed Countries: A Case Study, J.R. Caddick and B.G. Dale,

pp. 17-23. Case, Positive, Non-Empirical, Inductive [O]
 A Classification and Analysis of JPMM Articles, A.J. Williams and A.B. Oumil, pp. 24-28,
 Theoretical, Positive, Empirical, Inductive, [R]
 Coping with International Freight Weight Volatility, L.T. Thuong and C.Ho, pp. 29-35,
 Theoretical Normative, Non-Empirical, Deductive, [O]
 Demand Variability and Cost Effectiveness of the Incremental Part-Period Algorithm,
 P.C. Jordan, pp. 36-38, Theoretical, Positive, Empirical, Inductive, [R]

Volume 23, Issue 4, 1987

Electronic Data Interchange: Does It Change the Purchasing Process?, M.A. Emmelhainz,
 pp. 2-8. Theoretical, Positive, Empirical, Inductive, [K]
 Personal Factors in the Purchasing/Engineering Interface, J. Anklesaria and D.N. Burt,
 pp. 9-18, Theoretical, Normative, Empirical, Inductive, [D]
 JIT Purchasing in a Non-Manufacturing Environment: A Case Study, L.C. Giunipero and
 E.F. Keiser, pp. 19-25, Case, Positive, Empirical, Inductive, [A]
 Effective Buyers: Are They Cunning or Cooperative?, P.A. Dion and P.M. Banting, pp. 26-31,
 Theoretical, Normative, Empirical, Inductive, [D]
 A Conceptual Framework for Evaluating Capital Equipment Purchases, J.H. Perry, pp. 32-38,
 Theoretical, Positive, Non-Empirical, Deductive, [S]

Volume 24, Issue 1, 1988

Cost-Based Supplier Performance Evaluation, R.M. Monczka and S.J. Trecha, pp. 2-7,
 Theoretical, Normative, Non-Empirical, Deductive, [C]
 Price Analysis for Negotiation, R.G. Newman and J. Scordro, pp. 8-14, Practical,
 Normative, Non-Empirical, Deductive, [Q]
 Raw Materials Procurement Strategy: The Differential Advantage in the Success of
 Japanese Steel, K. Mohan and M. Berkowitz, pp. 15-22, Case, Positive, Non-Empirical,
 Inductive, [F] Using Vendor Capacity Planning in Supplier Evaluation, C. Ho and
 P.L. Carter, pp. 23-30, Theoretical, Normative, Non-Empirical, No Particular Logic, [C]
 An Alternative Criterion for the Quantity Discount Decision, C.A. Markowski and
 E.P. Markowski, pp. 31-34, Practical, Normative, Non-Empirical, Deductive, [B]

Volume 24, Issue 2, 1988

Implementing Electronic Data Interchange, R.M. Monczka and J.R. Carter, pp. 2-9,
 Practical, Normative, Non-Empirical, Deductive, [K]
 Single Source Qualification, R.G. Newman, pp. 10-17, Practical, Normative,
 Non-Empirical, No Particular Logic, [C]
 Determining Performance Appraisal Criteria for Buyers, T.E. Hendrick and W.A.
 Ruch, pp. 18-26. Practical, Normative, Empirical, Inductive, [D]

Evaluating Order Point Inventory Systems, J.A. Pope and A. Aradalan, pp. 27-32,
Theoretical, Normative, Non-Empirical, Deductive, [A]
Negotiating Quantity Discounts Using A “Learning Curve Style” Analysis,
C.J. Teplitz, pp. 33-40, Practical, Normative, Non-Empirical, Deductive, [B]

Volume 24, Issue 3, 1988

Purchasing: A Competitive Weapon, R.F. Reck and B.G. Long, pp. 2-8, Theoretical,
Positive, Non-Empirical, Inductive, [I]
Seller, Pricing Strategies: A Buyer’s Perspective, D.V. Lamm and L.C. Vose, pp. 9-13,
Practical, Normative, Non-Empirical, Deductive, [B]
Insuring Quality: Purchasing Role, R.G. Newman, pp. 14-21, Theoretical, Positive,
Non-Empirical, Deductive, [V]
Curriculum Development In Purchasing and Materials Management, J.M. Browning,
pp. 22-28, Practical, Positive, Non-Empirical, No Practical Logic, [J]
Competitive Bidding: Department of Defense and Private Sector Practices,
R.F. Williams and V.S. Bakhshi, pp. 29-35, Theoretical, Positive, Empirical, Inductive, [P]
Controlling Purchasing Price Performance, RB. Felch and R.I. Felch, pp. 36-39,
Practical, Normative, Non-Empirical, Deductive, [K]

Volume 24, Issue 4, 1988

Organizational Relationships in Purchasing, H.E. Fearon, pp. 2-12, Theoretical, Normative,
Empirical, No Particular Logic, [E]
Managing Volatile Exchange Rates In International Purchasing, J.R. Carter and S.K. Vickery,
pp. 13-20, Theoretical, Positive, Empirical, Inductive, [O]
The Purchasing Interface With Transportation, P.J. Walters, pp. 21-25, Theoretical,
Positive, Non-Empirical, Inductive, [M]
Purchasing Management Practices of Small Manufacturers, W.D. Presutti, Jr., pp. 26-31,
Theoretical, Positive, Empirical, Inductive, [E]
N.A.P.M. Business Survey Data: Their Value as Leading Indicators, P.A. Klein and
G.H. Moore, pp. 32-40, [R]

Volume 25, Issue 1, 1989

All the articles from this issue were reprinted from earlier issues. They have not been
re-classified or double-counted.

A Strategic Approach to Procurement Planning, R.E. Spekman, pp. 3-9
Managerial Planning in Procurement, F.L. Bauer, pp. 10-15
Top Management’s View of the Purchasing Function, D.S. Ammer, pp. 16-21
Purchasing Executive: General Manager or Specialist?, R. Tagiuri, pp. 22-25
Implementing Electronic Data Interchange, R.M. Monczka and J.R. Carter, pp. 26-33
The Buyer-Seller Linkage in a Just-in Time Environment, C.R. O’Neal, pp. 34-40

Material Requirements Planning and Purchasing, D.J. Bragg and C.K. Hahn, pp. 41-46
Supplier Development, M.R. Leenders, pp. 47-55
The Nuances of Negotiating Overseas, D.N. Burt, pp. 56-62
Use of Price Indexes in MRO Buying, P.L. Hanafee, pp. 63-70
Historical Evolution of the Purchasing Function, H.E. Fearon, pp. 71-81
The Great Transition, A.M. Taylor, pp. 82-86

Volume 25, Issue 2, 1989

Purchasing and Product Liability, R.J. Adams and J.M. Browning, pp. 2-9, Theoretical, Normative, Non-Empirical, Inductive [L]
The Buyer-Supplier Relationship in Total Quality Management, D.M. Lascelles and B.G. Dale, pp. 10-19, Theoretical, Positive, Empirical, Inductive, [C]
Single Sourcing: Short-Term Savings Versus Long-Term Problems, R.G. Newman, pp. 20-25, Theoretical, Normative, Non-Empirical, Deductive, [C]
Developing A Procurement Training Program, J.W. Henke, pp. 26-34, Case, Normative, Non-Empirical, Inductive, [J] A Comparison of Blanket and Systems Contracts, T.G. Noordewier, pp. 35-40, Theoretical, Positive, Empirical, Inductive, [B]

Volume 25, Issue 3, 1989

When, How and Why Suppliers Consider Price Moves, F.G. Bingham, pp. 2-8, Practical, Positive, Non-Empirical, Deductive, [B]
Cooperative Buyer/Seller Relationships and a Firm's Competitive Posture, R.Landeros and R.M. Monczka, pp. 9-18, Theoretical, Positive, Non-Empirical, Deductive, [C]
Currency Exchange Rates: Their Impact on Global Sourcing, J.R. Carter and S.K. Vickery, pp. 19-25, Theoretical, Normative, Non-Empirical, Deductive, [O]
The Impact of Just-In-Time on the Audit of Purchasing, E. Waples and D.M. Norris, pp. 26-30, Theoretical, Positive, Empirical, Inductive, [A]
Hospital Materials Management: Systems and Performance, S.T. Young, pp. 31-35, Practical, Positive, Empirical, Inductive, [K]
Allocation of Order Quantity Among Suppliers, A.C. Pan, pp. 36-39, Practical, Normative, Non-Empirical, Deductive, [K]

Volume 26, Issue 1, 1990

The Myth of the Cooperative Single Source, J. Ramsay, pp. 2-5, Theoretical, Positive, Non-Empirical, No Particular Logic, [C]
Fitting Purchasing to the Strategic Firm: Frameworks, Processes, and Values, V.T. Freeman and J.L. Cavinato, pp. 6-10, Theoretical, Positive, Non-Empirical, Inductive [F]
Vendor Profile Analysis, K.N. Thompson, pp. 11-18, Practical, Positive, Non-Empirical, No Particular Logic, [K]

Ethical Practices in Purchasing, L.B. Forker and R.L. Janson, pp. 19-26, Practical, Positive, Empirical, Inductive, [N]
Purchasing Strategies for Natural Gas in a Deregulating Market, R.L. Pirog and K. Taylor, pp. 27-32, Theoretical, Positive, Non-empirical, No Particular Logic, [E]

Volume 26, Issue 2, 1990

The Supplier Development Program: A Conceptual Model, C.K. Hahn, C.A. Watts and K.Y. Kim, pp. 2-7, Theoretical, Normative, Non-Empirical, Deductive, [C]
“Quality if Free”: A Comparative Study of Attitudes in the U.S. and Japan, W. Reitsperger, S. Daniel, and A. El-Shaieh, pp. 8-12, Theoretical, Normative, Empirical, Inductive, [V]
Accepting Soviet Goods in Countertrade: Problems with Product Quality, L.B. Forker, pp. 13-19, Theoretical, Positive, Non-Empirical, No Particular Logic, [O]
Joint Optimality in Buyer-Supplier Negotiations, P.A. Rubin and J.R. Carter, pp. 20-26, Theoretical, Normative, Non-Empirical, Deductive, [Q]
Materials Management Policies and Warehouse Requirements: A Case Study, K. Joshi, pp. 27-31, Case, Normative, Non-Empirical, Inductive, [U]
A Technique for Order Placement and Sizing, B.J. Coleman and M.A. McKnew, pp. 32-40, Practical, Normative, Non-Empirical, Deductive, [A]

Volume 26, Issue 3, 1990

Purchasing in the International Marketplace: Implications for Operations, J.R. Carter and R. Narasimhan, pp. 2-11, Practical, Normative, Non-Empirical, Deductive, [O]
Integrated Material Management in a Large Semi-Public Organization, J.F. Cannon and J.H. Perry, pp. 12-18, Case, Positive, Non-empirical, No Particular Logic, [A]
Motivating and Monitoring JIT Supplier Performance, L.C. Giunipero, pp. 19-24, Practical, Positive, Non-Empirical, Inductive, [C]
Effect of Pay Differential on Job Satisfaction: A Study of the Gender Gap, J.R. Lumpkin and K. Tudor, pp. 25-29, Theoretical, Positive Empirical, Inductive, [D]
The Cost of Ordering, J.R. Biggs, E.A. Thies and J.R. Sisak, pp. 30-36, Theoretical, Positive, Empirical, Inductive, [E]
Storage Space Costs and the EOQ Model, K. Joshi, pp. 37-41, Practical, Normative, Non-Empirical, Deductive, [A]

Volume 26, Issue 4, 1990

Lead Time Management: Private and Public Sector Practices, J.H. Perry, pp. 2-7, Theoretical, Positive, Empirical, Inductive, [H]
The Supplier Selection Decision in Strategic Partnerships, L.M. Ellram, pp. 8-14, Theoretical, Positive, Non-Empirical, Inductive, [C]
A Case Study of NUMMI and Its Suppliers, R.G. Newman and K.A. Rhee, pp. 15-20, Case, Positive, Non-Empirical, No Particular Logic, [C]

Determinants of Source Loyalty in Buyer-Seller Relationships, V. Sriram and V. Mummаланeni, pp. 21-26, Theoretical, Positive, Empirical, Inductive, [C]
 How Multidimensional is the Purchasing Job?, R.W. Jackson, pp. 27-33, Theoretical, Positive, Empirical, Inductive, [D]
 Forecasting the NAPM Purchasing Managers' Index, A. Raedels, pp. 34-39, Theoretical, Positive, Empirical, Inductive, [R]

Volume 27, Issue 1, 1991

U.S. Buyer's Relationships with Pacific Rim Sellers, R.E. Spekman, pp. 2-10, Theoretical, Positive, Empirical, Inductive, [O]
 Technology Management: An Important Element in the Supplier Capability Survey, W.D. Presutti, pp. 11-15, Theoretical, Positive, Empirical, Inductive, [C]
 Supplier Development: A British Case Study, Major J.D.A. Galt and B.G. Dale, pp. 16-22, Theoretical, Positive, Empirical, Non-Empirical, Inductive, [C]
 Market Research for Federal Contracting Officers: Key to Procurement Reform, J.J. Mulhern, pp. 23-26, Practical, Positive, Non-Empirical, No Particular Logic, [P]
 Scaling Evaluative Criteria and Supplier Performance Estimates in Weighted Point Pre-purchases Decisions, K.N. Thompson, pp. 27-36, Practical, Normative, Non-Empirical, Deductive, [C]

Volume 27, Issue 2, 1991

Global Sourcing: A Development Approach, R.M. Monczka, pp. 2-8, Theoretical, Normative, Non-Empirical, Deductive, [O]
 Purchasing from Minority Small Businesses, M.J. Dollinger, C.A. Enz and C.M. Daily, pp. 9-14, Practical, Normative, Empirical, Inductive, [C]
 The Strategic Consistency Between Purchasing and Production, C.H. St. John and S.T. Young, pp. 15-20, Theoretical, Positive, Non-Empirical, Inductive, [F]
 Performance Measurement and Decision Making in a Purchasing Environment, E.J. Dumond, pp. 21-31, Practical, Normative, Empirical, Inductive, [H]
 Managing Inventories in a JIT Environment, K. Joshi and J.F. Campbell, pp. 32-36, Practical, Normative, Non-Empirical, Deductive, [A]
 The Use of Approved Supplier Lists, R.E. Plank and V. Kijewski, pp. 37-41, Theoretical, Positive, Empirical, Inductive, [C]

Volume 27, Issue 3, 1991

A Managerial Guideline for the Development and Implementation of Purchasing Partnerships, L.M. Ellram, pp. 2-8, Theoretical, Normative, Non-Empirical, Deductive, [C]
 International Purchasing Strategies of Multinational U.S. Firms, H. Min and W.P. Galle, pp. 9-18, Theoretical, Positive, Empirical, Inductive, [O]
 Supplier Bar Codes: Closing the EDI Loop, J.R. Carter and G.L. Ragatz, pp. 19-23, Practical, Positive, Non-Empirical, Inductive, [K]

Trade-offs Under Uncertainty: Implications for Industrial Purchasers, R. Tullous and J.M. Munson, pp. 24-31, Theoretical, Positive, Empirical, Inductive, [E]
 The C.P.M. and Job Satisfaction, J.R. Lumpkin and R.K. Tudor, pp. 32-37, Prof, Positive, Empirical, Inductive, [G]
 The "Theory of Constraints" and the Make-or-Buy Decision, S.C. Gardiner and J.H. Blackstone Jr., pp. 38-43, Practical, Normative, Non-Empirical, Deductive, [T]

Volume 27, Issue 4, 1991

Redefining the Purchasing Function: An Entrepreneurial Perspective, M.H. Morris and R.J. Calantone, pp. 2-9, Theoretical, Positive, Empirical, Inductive, [E]
 Identifying Inter-firm Total Cost Advantages for Supply Chain Competitiveness, J.L. Cavinato, pp. 10-15, Theoretical, Normative, Non-Empirical, Inductive, [E]
 An Analysis of the Purchasing Manager's Position in Private, Public, and Non-profit Settings, E.W. Muller, pp. 16-23, Prof, Positive, Empirical, Inductive, [J]
 Supplier Performance Measures and Practices in JIT Companies in the U.S. and the U.K., T.J. Bilesbach, A. Harrison, and S. Croom-Morgan, pp. 24-28, Theoretical, Positive, Empirical, Inductive, [C]
 Purchasing in a R&D Environment: Effective Teamwork in Business, F.I. Stewart, pp. 29-34, Theoretical, Normative, Empirical, Inductive, [H]
 Leases Buy Decision Analysis, B.J. Holmes, pp. 35-40, Practical, Normative, Non-Empirical, Deductive, [S]

Volume 28, Issue 1, 1992

The Single Source Issue: U.S. and Japanese Sourcing Strategies, W.D. Presutti, Jr., pp. 2-9, Theoretical, Positive, Empirical, Inductive, [C]
 Operationalizing Quality Considerations in the Purchasing Process, J.H. Perry and C.A. Perkins, pp. 10-14, Practical Normative Empirical, Inductive, [V]
 A Bayesian Approach to Managing Foreign Exchange in International Sourcing, S.K. Vickery, J.R. Carter, and M. D'Itri, pp. 15-20, Theoretical, Normative, Non-Empirical, Deductive, [O]
 Purchasing Role in a Concurrent Engineering Environment, S. Dowlatshahi, pp. 21-25, Practical, Positive, Non-Empirical, Deductive, [I]
 The Role of Purchasing in Cost Savings Analysis, L.M. Ellram, pp. 26-33, Practical, Normative, Empirical, No Particular Logic, [W]
 An Overview of Certifications in the Purchasing and Materials Management Field, E.S. Wilkinson, Sr., pp. 34-39, Prof, Positive, Inductive, No Particular Logic, [G]

Volume 28, Issue 2, 1992

Cooperative Exchange: Rewards and Risks, B.K. Pilling and L. Zhang, pp. 2-9, Theoretical, Positive, Empirical, Inductive, [C]

Purchasing Views on Counter-trade, L.B. Forker, pp. 10-19, Theoretical Positive, Empirical, Inductive, [O]
 Value of Supplier Information in the Decision Process, R.M. Monczka, E.L. Nichols, Jr. and T.J. Callahan, pp. 20-30, Theoretical, Positive, Empirical, Inductive, [C]
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